A CASE STUDY OF A BLENDED E-LEARNING PROGRAMME FOR CARERS AND PRACTITIONERS IN THE FIELD OF AUTISM SPECTRUM DISORDERS.

By

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ABSTRACT

This research focuses on the productive learning processes of students studying a blended e-learning programme for practitioners and carers of individuals with autism spectrum disorders (ASD). It is an ethnographic case study undertaking a holistic analysis of learning processes. It draws upon socio cultural and activity theory as theoretical lenses and using dimensions from the communities of practice framework to interpret the kinds of discourse that are suggestive of a community of practice. The study examines how learners appropriate the professional discourse, values and goals of the ASD carer and the kind of collaborative engagement students have with each other's contributions. Findings highlight that online discussions are powerful mechanisms for the development of reflection, for giving parents a strong voice and for shaping the values of this community. The research suggests that a facilitation model that enables students to be co-learners and co-tutors together, supports the development of a community of practice, thus enabling students to acquire knowledge in one context in order to transform it to another. Recommendations include the need for further studies that examine a particular communication medium in detail and over time, that communities of practice can add value to pedagogy in higher education and that programme tutors need to consider the specific properties of different communication mediums when designing programmes.

DEDICATION

I would like to dedicate this PhD to some important people in my life who passed away in the last two years. It is first and foremost dedicated to my late mother Dr Ann Mary Rathie Guldberg who encouraged me in my work and who was passionate in her quest for further knowledge and her own continued personal and professional development. I would also like to honour my uncle, Dr John Black, whose life as a compassionate and caring doctor gave inspiration. He helped me gain a better perspective on what really matters in life. To my good friend, Gina Owens, who died after a long period of suffering, as thanks for those exciting discussions about a variety of topics, for her gentle warm nature and positive relationship with us all as a family. To Alison Tucker as a deep thanks for her involvement in creating the WebAutism programme. She gave guidance, calmness and a sense of perspective to us novices, filming with us in a variety of provisions and editing our audiovisual material, never failing in her belief of how worthwhile our project was. To Dave Hallsworth**,** an inspirational friend, for inspiring me to believe in change and in the importance of striving for a better world.

ACKNOWLEDGEMENTS

This PhD would never have even have been started without the encouragement and support of my husband Derek and my sons Marcus, Aidan and Stefan. They know best what they have had to put up with. My father, Dr Hans Cato Guldberg, has provided me with inspiration throughout. I have a number of colleagues and friends to thank too. Rachel Pilkington for her gentle support and for allowing me to develop at my own pace. Paul Edwards, Dan Corlett, and Danielle Hinton for transforming the vision into reality on the WebAutism programme; Claire Robson for holding everything together and for keeping me sane; Professor Ann Lewis, Andrea Macleod, my colleagues in the autism team and the wonderful tutors on our programme, for their positive outlook and excellent work. I would also like to thank all those dedicated students I have had the privilege to meet, sometimes only 'virtually'. I will always be grateful for having been given the permission to conduct this research and for being given a glimpse into the window of their learning.

NOTE ON PUBLICATIONS ASSOCIATED WITH THESIS

An earlier version of chapter seven appeared in the Journal of Computer Assisted Learning: Guldberg, K. and Pilkington, R. (2006) A community of practice approach to the development of non-traditional learners through networked learning, *Journal of Computer Assisted Learning*, Vol. 22, No. 3, pp. 159-171. This was a joint paper written with my supervisor. The paper has been extended in the thesis by exploring further data and themes, analysing existing data in more depth and integrating it with the thesis. In the original paper, Dr Pilkington and I worked alongside one another but the extension work is mine alone. The original paper represented seventy percent of my work and thirty percent of Dr Pilkington's.

An earlier version of chapter eight appeared in the International Journal of Lifelong Education: Guldberg, K. (2008) Adult learners and professional development: How students show reflection, sensitivity towards the perspectives of others and teamwork through online dialogue, *International Journal of Lifelong Education*, Vol. 27, No. 1, pp. 35-49. The paper has been substantially extended and re-structured in this chapter to integrate it with the thesis and by exploring further data and themes arising from the data in the discussion section.

An earlier version of chapter nine appeared in a special issue of the Journal of Educational Technology and Society: Guldberg, K. and Pilkington, R. (2007) Tutor roles in facilitating reflection on practice through online discussion*, Special Issue of Journal of Educational Technology and Society,* Vol. 10, No. 1, pp. 61-72. I wrote the majority of the chapter myself with some input from Dr Pilkington. On the whole, it is my own work. The paper has been extensively extended in this chapter by undertaking further data analysis, integrating it with the thesis and exploring themes in more detail in the discussion section of the chapter.

List of abbreviations

ABA Applied Behavioural Analysis

ASD Autism Spectrum Disorder

AS Asperger Syndrome

CSCL Computer Supported Collaborative Learning

CPD Continuing Professional Development

DfES Department for Education and Skills

DoH Department of Health

DSM IV Diagnostic and Statistical Manual (Edition 4)

ICD International Classification of Diseases

NIASA National Institute for Autism: Screening and Assessment

PECS Picture Exchange Communication System

SEN Special Educational Needs

TEACCH Treatment and Education of Autistic and Communication handicapped Children.

VLE Virtual Learning Environment

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CHAPTER ONE: INTRODUCTION

1.1. Background

This thesis grew out of two passions that shape my own professional life. The first is a commitment to provide excellent training opportunities to practitioners and carers in the field of Autism Spectrum Disorder (ASD). The second is a fascination with how people learn and how to enable dialogic learning in blended e-learning environments.

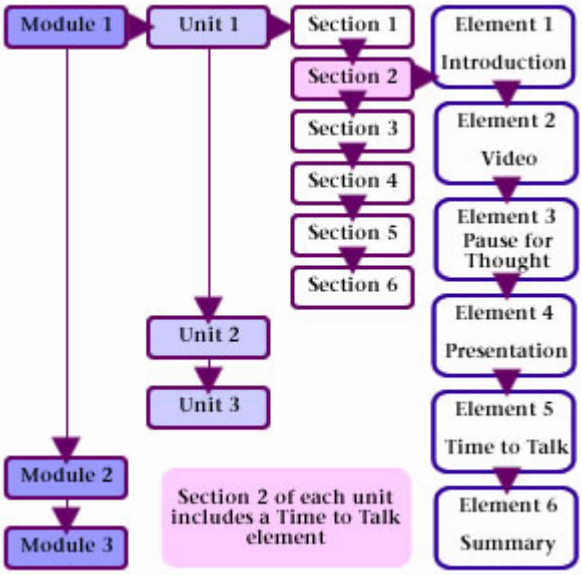
In order to explain how these two interests come together to provide a focus for this doctorate thesis, I would like to give a brief outline about myself, and my professional background and roles. Having worked for many years as a teacher of early years and primary age children and having specialised in working with children with ASD, I moved from this to a lecturing post in Higher Education. The School of Education at the University of Birmingham had secured funding from the Shirley Foundation, a trust that funded key strategic developments in the field of ASD, to create and develop a blended e-learning programme for practitioners and parents in the field of ASD. A team of people were appointed to develop this programme and the role of the team was to develop a learning environment that would enable us to meet the learning needs of these carers and practitioners (Guldberg & Pilkington, 2007). I had responsibility for content creation and pedagogy.

Thus, in designing the WebAutism programme, emerging issues that related to this group of students' needs were taken into account. WebAutism became a

flexible and blended e-learning programme. Our design used online module activities supported by face-to-face workshops and online tutorials with the underlying pedagogy emphasising interaction, collaboration, the development of reflection and active learning (Guldberg & Pilkington, 2006). It became carefully structured with close integration between online teaching materials, CD ROM audiovisual resources, online discussions and printed module readers. Online sections were structured in the same way throughout, so that students would quickly become familiar with the learning environment, thus minimising the learning overhead involved in navigating the online materials (see figure one).

There is an annual intake of two hundred and sixty-five students onto the programme and students are, primarily, support staff, teachers or parents who care for, or work with, people with ASD. For many learners, this programme of study represents re-entry into formal education after many years of no formal study. The programme is studied part-time for a year and leads to the award of University Certificate (ASD), earning students sixty credits at level C. There are thus a large number of non-traditional students who are studying at undergraduate level and by distance, part time. Most are working full-time whilst studying, or are parents caring for a child, or adult, with an ASD. The programme of study is designed to provide students with a broad understanding of ASD, an introduction to the latest research and an insight into current practice. It prepares both practitioners and parents to draw upon recognised strategies for meeting the needs of individuals with ASD in a variety of settings.

Figure 1: The structure of the WebAutism programme.



It is worth noting here that there are two programmes of study: the University Certificate (ASD) and the Certificate of Higher Education (ASD), the latter being available after two years of part-time study. The numbers recruited above represent students recruited for both programmes of study. Approximate figures generally break down into two hundred students studying the University Certificate (ASD) every year and sixty-five students per year studying the second year of the programme, the Certificate of Higher Education (ASD). The research for this thesis is based upon the first year of the programme, the University Certificate (ASD), and will be referred to as WebAutism throughout the thesis.

1.2. The teacher researcher

I am strongly committed to WebAutism and to its aims and underlying philosophy. These are about changing and improving care and practice with a

principle aim to enable the development of reflective and skilled practitioners sensitive to the needs of people with ASD. My role is to co-ordinate the programme and I currently work in conjunction with a team of two other academics, a large group of regional tutors, an administrator, and with support from the School's e-learning team. My strong commitment to this programme is coupled with an awareness of a gap in the evaluation of training courses in ASD and the need for in-depth qualitative research on how blended e-learning environments impact on students, including how students learn though online discussion. This has led me to focus my doctorate work on these two aspects.

There is a recognised need for lecturers to develop a more critical awareness of their own skills and through the process of reflection work towards improving that practice (Oliver, 1998). I welcome the opportunity to engage in critical reflexive pedagogy in terms of my own professional development. Having said this, I am also acutely aware of the tensions inherent in my dual role as programme co-ordinator and researcher. This dual role generates a unique set of issues and potential tensions, which I discuss further in chapter two. Key tensions relate to the possibility of merging the two roles (Nixon, 1981), the danger of subjectivity and bias (Greenbank, 2003), the involvement of the researcher in the research process itself and the possible preconceptions that can surround that (Burgess, 1985), together with the sensitive issue of carrying out research in one's own institution, including the importance of adhering to confidentiality (Robson, 2002).

Despite the inherent tensions, which should in no way be underestimated, my intricate knowledge of the student group, and of the programme itself, potentially puts me in a position to draw connections, to see issues from a variety of perspectives and to understand how change can be taken forward (Carter, 1998; Lacey, 1996). I feel research of the programme has the potential to lead to important insights as it can allow me as a teacher to look for connections and build bridges between theory and practice, and through this, to improve practice (Boyle, While & Boyle, 2004; Boyer, 1990). This close involvement can also provide access to otherwise potentially unobtainable data. It can be less intrusive so more authentic and has the added potential to enhance academic practice and enable reflective practice (Schon, 1987). Throughout the research, I recognise these tensions but nevertheless aim, as far as is possible, to stand back from my role as programme co-ordinator to investigate the issues in as balanced a way as possible, with a clear ethical protocol (discussed further in chapter two). I work hard throughout the thesis to separate my two roles as clearly as I can, whilst acknowledging how they influence and impact on one another.

1.3. Timeliness and relevance

This study is timely and relevant due to the recognition of the need in the ASD field to evaluate and improve training for carers and practitioners (Myles & Simpson, 2002; Jordan & Howlin, 2004). With an increasing number of individuals with ASD being diagnosed, the complex nature of the disorder means that people who care for or work with these people need training in

understanding and providing an enabling environment for them (MRC, 2001; Elliott, 2004). There are currently a number of awareness raising and training programmes available nationally and internationally, with few being evaluated (Jordan, Jones & Murray, 1998). There is potential to make the evaluation of WebAutism into a unique evaluation in its field in that it evaluates one particular programme using a number of data sources, from a number of vantage points. Data from WebAutism is studied over the period of a year involving a number of different stakeholders, to include the programme team itself, the external examiner, regional tutors and students. It does this through building a working knowledge of the skills and competencies that reflect what is considered to be good practice in the field of ASD and by assessing the extent to which this programme meets those aims.

The second aspect of this research that makes it timely and relevant relates to the fact that emergent methods of learning delivery, particularly electronic environments, are giving rise to new research arenas (Laurillard, 2002; Garrison & Anderson, 2003; Ellis & Goodyear, 2007). With the increasing development of blended e-learning programmes, researchers and designers are debating how best to meet the needs of students in this type of environment, including the need to evaluate in authentic contexts, to look at what is actually happening in these environments and the need to understand how learning design impacts on learning (Macalpine, 2004). This study therefore takes note of McConnell's (1994) call to conduct more research in real settings where participants use the

medium for important meaningful and purposeful reasons. This includes analysis of real life learning situations to find out what tutors do and why (Oliver, 2006).

This study aims to meet the combined aims, outlined above, of developing further insight into what constitutes good training for ASD practitioners and understanding how online learning environments can enable learning. It does so by analysing WebAutism through the learning processes involved, with a particular focus on how students learn from one another through online dialogue. Research questions include exploration of what stakeholders perceive to be the necessary skills and competencies of the ASD carer or practitioner (conceptions of good practice). Furthermore, based on the views of educational professionals, as well as other stakeholders, I am interested in how acquisition of these skills and competencies can be facilitated through pedagogical design and learning activity. The research explores the extent to which the views of stakeholders and the analysis of other data sources suggest the programme is aligned constructively to identified student needs, and pedagogic aims.

Finally, there is the question of what online discussions can tell us about student development and learning processes, in terms of how this community is formed and develops. These research questions are refined further as a result of the different literature reviews undertaken and these are outlined in the relevant chapters. Given the multifaceted learning environment of WebAutism, there is scope to take this study in many directions. However, the study stays tightly focused on a study of the conditions for productive learning. It does this by using

the theoretical perspective of socio-cultural and activity theory as a framework for the study.

1.4. Theoretical framework

My practice and experience has led me to conclude that in order to understand how people learn, we need to focus not only on perception and thinking but also on emotion and motivation (Jordan & Powell, 1999). The programme itself is based upon some theoretical assumptions, including the notion that meaningful learning is constructed out of experience, and that the sharing of experience through discussion is a stimulus for reflection that can impact on practice (Kolb, 1984; Schön, 1987; Mercer, 1995; Garrison & Anderson, 2003). The aim is therefore to investigate consciousness within this practical and social learning context. For this purpose socio-cultural and activity theory can be useful lenses through which to examine more closely both the psychological aspects of activity and the social conditions of the systems that produce it (Engestrom, 1987; Ekeblad, 1998). These perspectives become a conceptual tool or framework through which the dialogues, multiple perspectives and networks of interacting participants can be better understood. Socio-cultural perspectives can also be brought to bear on developing understanding of how students' different identities are mediated, in terms of the interrelation between work based identities, learner identities, and changes in perception of identity, as part of the learning process (Reeves & Forde, 2004; Wenger, 1998). This includes investigation of how students talk about their identities as carers and practitioners in the field, whether they express shared values in relation to what

they consider to be ‘good practice’, and what they say about how the programme has impacted on their practice and thus enabled the development of a third identity, the potential changing identity.

Therefore the study investigates, as one of its aims, whether the theoretical framework of socio-cultural activity theory and socio-cultural approaches to learning provide useful frameworks for the evaluation of this learning environment. This means drawing upon the work of Vygotsky (1978) and Engestrom (1999), together with work on situated learning and communities of practice (Lave & Wenger, 1991; Wenger, 1998). The aim is to use those theoretical frameworks to critically evaluate the theoretical assumptions underpinning these approaches in the light of my analysis. The first test is whether this framework gives the opportunity to understand learning both in terms of a micro-analysis of group interactions and in terms of a macro-analysis related to the socio-cultural context in which learning occurs (Dillenbourg, 2004). The study therefore examines the programme of study by analysing it on three levels. The first level covers the macro level, which includes large-scale strategic development in the field (chapter three). The second level examines the meso level which includes the programme of study itself and the activity systems involved in creating, developing and maintaining it (chapters four and five). The third level focuses on the micro level, which includes group relations through the mediating tools themselves, in this case the compound tools, protocols and written text-based messages of online dialogue, and what these can tell us about how the community constructs itself. The approach to the analysis of online

dialogue sees talk itself as a tool for creating shared understanding but also appreciates that language is not a single, homogenous ‘mediating artefact’ but is a communicative toolkit, taking on a variety of forms as it is used in teaching and learning (Mercer & Littleton, 2007). The notion of a cultural tool therefore refers not only to physical tools and artefacts but also extends to the symbolic tools elaborated within this specific culture and it is these that are of particular interest in this research.

The thesis explores the question of whether this approach enables analysis of the organisation of the learning environment and the connections between learners and other learners, between learners and tutors and between learners and resources. This thesis is interested in the activity that goes on in this community. This involves trying to understand how activity is influenced by the instruments used, the community that the students belong to, and the kind of collaboration going on in the community, guided through rules and the division of labour (Engestrom, 1987). It is about trying to understand how those different ‘systems’ or collections of individuals work together as a social entity.

This research also explores whether the programme design enables the development of community (Wenger, 1998), whether there is evidence, through examination of online discussion, of the establishment of shared practice and what Wenger would describe as the journey of ‘meaning making’ through which the students travel in their time as students. I am particularly interested in applying Wenger’s notion of overlapping communities of practice to assess whether this framework can enable understanding of the development of

community in this context and in particular the notion of how boundary communities might interrelate and influence the shaping of identity (Reeves & Forde, 2004). Students arrive on the programme from a variety of different backgrounds and settings. Some are parents, some are practitioners and some are both parents and practitioners. Students work with or care for both children and adults with ASD across a range of needs, ages and abilities. The students are therefore addressing how to provide good quality care and educational intervention in the home, in schools or in adult services. They are therefore likely to have a number of different trajectories, interests and perspectives when they arrive on the programme. The study explores how this belonging to a number of different types of communities might impact on how students communicate and poses the question as to whether those different trajectories, and their motivation in relation to those enable or constrain the development of community in this setting. The learning environment is thus seen as a social and cultural setting that is part of a wider community and has its own cultural practices and social norms.

I aim to undertake practical educational research that is both theoretical and practical, where those two strands are woven together in an empirical and theoretical investigation of the programme (Mercer & Littleton, 2007). Theoretical ideas about how people learn are tested through investigation of the WebAutism programme. It is hoped that these investigations will in turn provide new insights into not only what works but also what can be improved, thus leading to an evidential base for practice of a more robust kind.

1.5. Methods

I use an approach based largely on ethnographic methods that aim to give detailed descriptions of the experience of the different stakeholders involved in WebAutism, with an emphasis on the student voice. My own position within this programme aligns with an ethnographic approach, the central features of which have been defined as first-hand observation of events through long-term engagement with the situation (Woods, 1994). I thus try, from the vantage point of my own position, to develop the story as experienced by participants and to gain a multi-dimensional view of the setting. This includes trying to discover how people relate to one another, how they find meanings in their activities and how 'they engage in processes in which they individually and collectively define (antecedents and consequences of) their situations' (Gold, 1958, p. 391). This ethnographic approach emphasises the importance of observation and the value of human subjectivity in the evaluation process. This is compatible with 'illuminative evaluation,' an observational approach to evaluation that is inspired by ethnographic research and methods. It aims to discover the factors and issues that are important to the participants in the particular situation rather than how well the innovation performs against standard measures of evaluation. It attempts to explain new learning practices in terms of theories and beliefs about the learning of knowledge, skills and attitudes. Illuminative evaluation has thus been defined as the discovery of how an education intervention performs by observing and measuring the teaching and learning process (Draper et al., 1996).

However, the methods used also include a more mixed methods approach (Robson, 2002) than the label of ethnographic research alone would suggest. Some numerical methods are additionally used in triangulation for some aspects of the investigation. Techniques draw on a wide base of methods from survey and evaluative research designs and include some quantitative data collection. A substantial part of the research uses discourse analysis of online bulletin discussion to analyse online asynchronous discussions. This mix of methods is aimed at improving the robustness of the design through triangulation of evidence from a variety of different data sources, each of which may best be analysed in one or more different ways, to help determine the role of factors at the macro level of the ASD field of practice, at the meso level of the programme, as designed and situated within the particular institution (University of Birmingham), and at the micro level of group interaction and individual levels. Multiple sources of evidence are used in order to compare and corroborate emerging interpretations. So, although the research is primarily qualitative with a focus on student learning processes, there is methodological triangulation in that a number of quantitative methods are also brought to bear on data from an entry questionnaire, evaluations and archives of online discussion.

The hope is that this approach will help draw out any contradictions between the interpretation emerging from data collected for audited, institutional quality assurance processes, and the views suggested by the students' voice in online discussions. At times, quantitative data is also used to help give insights that assist in sampling decisions, suggest the typicality of the data, or the extent

to which the qualitative analysis may relate to other characteristics emerging from quantitative analysis. Using mixed methods in this way can help highlight areas of tension or conversely strengthen the credibility of results through similarity of findings. Despite the focus on online dialogue, the study also describes the different components of the programme and how they interrelate, and it examines these to identify ways of improving the learning environment as a whole, thus giving an evaluative as well as a descriptive purpose to the research. These issues are discussed further in the next chapter, which outlines the conceptual framework for the thesis; encompassing both a literature review and an explanation of the research design emerging from that (chapter two). The data collection methods for each phase of the research are discussed further below through the three distinct phases to the research.

1.6. Structure

In terms of the logical flow of the study, I have approached the structure of the thesis in the following way: in order to understand the programme itself, and the students, we need to know who they are, where they work, why they want to undertake the programme and we need to understand the context in which the programme is located. After having explained the conceptual framework for the study through undertaking a research-based literature review, I outline the research design (chapter two). After this, I undertake a literature review of the context for the ASD field of practice in which the programme is located, and thus discuss the literature on training and strategic development in the field of ASD in the UK. This is followed by a description of the demographic profile of the

students and an analysis of their needs as this situates the students themselves in the context of the wider ASD field of practice (chapter three).

Once this macro level has been covered, I move to the meso level, which is the level of the educational institution and the design of the programme as situated within this institution. Chapter four focuses on the culture and the shared values of the community, including the pedagogical design. Chapter five uses socio-cultural and activity theory to examine the organisational structures and systems that deliver the WebAutism programme, including how contradictions are resolved. These two chapters (chapters four and five) include the voices of tutors, students, external examiners and external reviewers. Here I also triangulate with participant voices data derived from student module evaluations, team meeting minutes, assessed work, external examiner feedback, tutor feedback and quantitative outcome data, to build up a rich picture of how the community constructs itself, how different activity systems interrelate with one another, and how tensions and conflicts are resolved within the community. This exploration of the meso level allows a move from the general to the particular and sets a context for subsequent analysis of dialogue at the group and individual level, and what this tells us about the construction of community.

Finally, the third part of the study examines the micro level of group interactions and this involves discourse analyses of samples of bulletin board discussions, focusing on what these discussions can tell us about how the community develops, how students interact with one another and with resources, and how dialogue impacts on learning. These are analysed in detail and the

focus is on developing tools for assessing mutual engagement, and changes in collaborative activity, as both those are measures of learning to become a reflective practitioner. This phase also focuses upon appropriation of the language of practice including how vocational identity develops over time during activity and how the community come to share common values and goals. A sample of bulletin board discussions of different groups allows for some comparison across groups. The empirical analysis is divided into a study firstly of what online discussions tell us about how the community is formed, secondly, how peers (the students themselves) communicate and interrelate with one another and thirdly, there is exploration of the role of the tutors in this learning environment. These issues are covered in chapters seven, eight and nine. Figure two gives a representation of the research design.

Figure 2: Research design diagram

<table>
<tr><td colspan="2">Theory</td><td colspan="2">Design
Case study</td><td colspan="3">Mixed methods</td></tr>
<tr><td colspan="2">Socio-cultural and activity theory.
Social learning theory</td><td colspan="2">Research Focus:
Meaningful and productive learning
Learning through engagement and participation</td><td colspan="3">Ethnography
Discourse analysis
Numerical data
Questionnaires
Archive of programme documentation</td></tr>
<tr><td colspan="7">Levels</td></tr>
<tr><td colspan="2">Macro</td><td colspan="2">Meso</td><td colspan="3">Micro</td></tr>
<tr><td colspan="7">Elements of the learning context</td></tr>
<tr><td>The ASD training field</td><td>The Web Autism students</td><td>The activity systems that deliver WebAutism</td><td>The culture and shared values</td><td>Community</td><td>Peer to peer</td><td>Role of the tutor</td></tr>
<tr><td colspan="7">Link to chapters</td></tr>
<tr><td colspan="2">Chapter Three</td><td>Chapter Four</td><td>Chapter Five</td><td>Chapter Seven</td><td>Chapter Eight</td><td>Chapter Nine</td></tr>
</table>

CHAPTER TWO: THEORETICAL PERSPECTIVES AND RESEARCH DESIGN

2.1. Introduction: Knowledge and practice

> Knowledge and practice cannot be opposed but only mutually reinforcing. Practice without understanding of the enduring forms of knowledge is blind, while knowledge detached from the world of practice remains impotent and pointless. The learning process is not a 'technical competence' and cannot unfold without recognition that knowledge is explored through, but also created in, reflective practice (Ranson, 1998, p 50).

I start this chapter with the quote above because it has been particularly apt in guiding me in the development of this thesis and it has a variety of different meanings for me, depending on what vantage point I take. When examining the quote above, I unpick it from a number of perspectives. By explaining the multiple meanings it has for this research, I hope to set a context for outlining why I opted for focusing on this particular research, why I chose a particular paradigm, and how this paradigm influenced decisions about methodology and methods. This chapter therefore starts by undertaking a literature review of the research context and through this, explains my own personal and professional motivation for undertaking this study including my own role within it. Flowing from a discussion about epistemology and the chosen theoretical framework, I outline my research design.

2.2. Background

In relation to the quote from Ranson (1998), above, the first point to emphasise is the inter-relationship between knowledge and practice, for me, as an individual teacher of children with ASD. I worked as a teacher in the classroom and in outreach provision with children with ASD for a number of years. I became 'bitten by the bug of autism' (Peeters & Jordan, 1999) as it is often described in the field, becoming intrigued by how different, yet similar, these children were, and by trying to 'get inside their heads,' to understand how they think and how they perceive the world (Sainsbury, 2002; Lawson, 1998). My experience as a teacher highlighted very clearly to me that there were a number of therapeutic and educational approaches that could be used to help and support the person with an ASD (Jordan & Jones, 1999). I drew on many of those approaches and they became tools to work with.

Whilst teaching, I simultaneously studied for a Master of Education (MEd) in ASD and developed knowledge and insight through this too (Guldberg, 2001). By using this knowledge and insight and applying it to my understanding of the individual child, I found that I could make a far greater difference to these children than before I had this knowledge. My development as a practitioner thus arose out of the interrelationship between my increasing knowledge and the application of this knowledge to my day-to-day practice. Through this, I started to become better at understanding the conditions for effective learning for these children including what motivated them. I personally feel that this transformed the way I worked with the children.

Meanwhile, I also became increasingly intrigued by how knowledge and practice are interrelated in the field of ASD more generally. In my position as outreach teacher I was involved in running short-term training courses for practitioners and conducted inset training in many schools. I was curious to what extent these courses made a difference to the practice of the trainees. When I became a lecturer in Higher Education with the responsibility to develop and run WebAutism with a large cohort of students, my interest in exploring the interrelationship between knowledge and practice increased further. I became intrigued to understand how students might be able to become better carers and practitioners through their study of the WebAutism programme. I wondered what kind of conditions give rise to a learning environment that enables people to develop their practice. I wanted to know to what extent knowledge and practice are intertwined for practitioners and parents on this specific programme.

My individual position as a lecturer in Higher Education enabled me to consider the interrelationship between knowledge and practice from a slightly different vantage point too. Whilst the above issues were important factors in guiding me to develop a focus for my PhD, there were also pragmatic factors, such as how to ensure that my teaching and research were closely linked, and working towards teaching and research synergy. Of course, I recognise that quality teaching requires substantial scholarship, as a good teacher will always research their subject to keep abreast of research in this sense, so teaching and research are clearly not antithetical categories. Indeed, Laurrillard (2002) highlights that academics share some important traditions, which we should

continue to value. These include the pursuit of research and scholarship and the advancement of learning (Ramsden, 1992). This means that we put teaching on an equal footing with research (Badley, 2003) and that we challenge the notion that teaching is an activity deriving from research rather than a form of scholarship itself (Andre & Frost, 1997). Boyer (1990) advocates the need for a scholarship of teaching, viewing teaching as establishing a common ground of intellectual commitment, quoting Aristotle in seeing teaching as the 'highest form of understanding'. He states that the work of the scholar entails stepping back from one's own investigation, looking for connections, building bridges between theory and practice, and communicating one's knowledge effectively to students (Boyer, 1990, p. 16).

This role of educational researcher, when applied to the study of learning and teaching activities in which the researcher is active in a teaching role is certainly not without its tensions. Nevertheless the value of an actively reflexive approach to teaching that involves the collection of evidence from one's own practice is of value to me personally, and is also being widely acknowledged as an important element in CPD (Continuous Professional Development), particularly in the Dearing report (NCIHE, 1997). The move towards professionalism in teaching has gathered pace during the 1990s as the working environment has moved from being an environment of academic autonomy to one of accountability to stakeholders (Fry, Ketteridge & Marshall, 1999). This highlights a further set of tensions in relation to the vision of reflective practice I have so far suggested. There is most certainly a difference between the

collection of evidence for the purposes of audit, on the basis of which others may judge the standard of teaching, and the collection of evidence on one's own practice for the purpose of reflection on and development of that practice. This further suggests some of the tensions alluded to earlier that might arise between the roles of teacher and researcher even of one's own practice and most certainly in relation to the collecting of evidence used to evaluate the practice of others.

Partly as a consequence of the drive toward increasing participation in Higher Education there has been a trend towards larger and more diverse student groups coupled with changes in funding. Universities also recognise the need to engage in provision of lifelong learning opportunities. The changing profile of students, the demands of lifelong learning, and the potential for information technology have all added to a sense that the role of the lecturer has changed and will continue to change. There is a need for CPD not just at the initial stages of lecturing but throughout the career of the lecturer (Fry et al., 1999). Issues arising for professional identity include a push to locate academic identity not solely within a subject discipline but in shared aims and values concerning teaching in Higher Education (HE). Laurillard (2002) points out that, whilst course descriptions often focus on the subject knowledge that we want students to learn, academics also need to recognise that how students approach their subject is as important to them as what they end up knowing. It also involves knowledge about pedagogy, and employment of appropriate methods to achieve learning outcomes. I see my development as a teacher within this

framework. I am excited by these possibilities of conducting a scholarship of learning and teaching.

I believe that my own teaching circumstances in having developed an innovative learning environment engaging high numbers of students has put me in a strong position to conduct research that could potentially be new, original and enlightening to both myself and others, including the use of research to enhance the educational quality of the programme. My aims therefore include using this research on student learning to deploy this knowledge in my approaches to teaching (Entwistle, 1998). My main teaching is currently associated with the WebAutism programme. I have been responsible for the design and development of the pedagogy and content of this programme and although other academics currently work with me on this programme, I co-ordinate it. It is therefore logical that my desire to work towards synergy between teaching and research would lead to an analysis of the WebAutism programme as a whole, which to some extent includes my own position within it. Given that a team of people were involved in developing WebAutism, and I played a central role in it, this means that any analysis of the learning environment examines the learning environment as a whole but also impacts on my own teaching role within that. As already suggested the approach is not without attendant risks and how these might be addressed to a degree is discussed further below. Before doing this, I outline my own epistemological approach, and the theoretical framework flowing from that.

2.3. An interpretative paradigm

> Because academics are concerned with how their subject is known, as well as what is known, teaching must not simply impart de-contextualised knowledge, but must emulate the success of everyday learning by contextualising, situating knowledge in real-world activity (Laurillard, 2002, p. 28).

This quote from Laurrillard (2002) provides a good context for explaining my own epistemological approach to the knowledge construction process itself. In developing the learning environment, my aim as a teacher was to develop a learning environment that would enable students to become reflective practitioners who questioned their practice and who would hopefully change their practice as a result. I wanted to deliver content to students that not only gave them new knowledge and understandings, but at the same time offered them chances to relate that knowledge back to their everyday experiences in caring for or working with an individual with an ASD, to make new connections there that would serve to develop understanding, anchor knowledge, to experience and construct new meanings. To really improve as a teacher, I wanted to test whether there was evidence of students being able to do this.

In my research, the focus needed to be, not so much on how students arrive at changed understanding or how they meet learning outcomes, but what that journey towards changed understanding entailed, what the processes were that enabled students to relate or situate their knowledge in real-world activity (Wenger, 1998). Given that my interest is on learning processes and understanding those from the standpoint of the students, I accept that this entails an approach that accepts subjectivity and the idea that research can result in

different or ‘multiple realities’. I want the focus to be on identifying the meanings and interpretations people place on issues, events or relationships in their own contexts. My interest is in trying to discover the conceptions of reality that students are developing in their time as students on this particular programme.

The research is therefore located in a largely interpretative paradigm that is traditionally perceived as being based upon qualitative, interpretative and ethnographic methods. Efforts are made to get each individual’s perspective and to understand how individuals interpret reality. Nevertheless, I take the standpoint that the subjective does not exist in a vacuum. The meanings people attribute must be located in a structure of meanings. Bernstein (1974) argues that the very way in which we interpret and define situations is itself a product of circumstances in which we are placed. This focus does not see experience as explaining everything or as the ultimate reference point for knowledge claims about the world. Rather, it recognises that experience itself will be suffused with meaning and that the micro settings of classrooms and learning environments such as these are shaped by the workings of wider society (Hargreaves, 1975). I have therefore opted for a synthesis of macro and micro approaches. In relation to this study, this translates into probing deeply and analysing intensively the multifarious phenomena that constitute the life cycle of WebAutism. My concern in this study is with how the programme team interrelates with students in a way that enables students to articulate their knowledge through exposition, argument, interpretation, and reflection on experience. I want to know how the learning and

teaching environment enables students to go beyond their specific and individual experiences to use their knowledge in different ways.

2.4. The case study

The study is, therefore, a case study, since it is 'an empirical evaluation of a particular contemporary phenomenon within its real life context using multiple sources of evidence' (Robson, 1993, p 52). Yin (1984) also defines the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context. The unit of analysis is a critical factor in the case study. It is typically a system of action rather than an individual or group of individuals and this cultural system of action refers to sets of interrelated activities engaged in by the actors in a social situation. Robson (2002) states that in a case study, the case is the situation, individual, group or organisation. The central characteristic of this type of study is that it is a concentration on a particular case studied in its own right and is concentrated on a specified social or physical setting. In this study, the case study is the University Certificate (ASD), its learning environment, students and teachers involved in it, described in this research as WebAutism. Although the primary concern is not with generalisation but with developing an adequate description, interpretation or theory of this one particular case, insights into this particular case can nevertheless benefit others, or have wider implications.

The key characteristic of a case study such as this is that it strives towards a holistic understanding of that cultural system of action. It emphasises detailed contextual analysis of a limited number of events or conditions and their

relationships to one another. This research therefore investigates the object of the case study in depth using a variety of data gathering methods to produce evidence that leads to understanding of the case and answers the research questions. As an interpretive, inductive form of research, the focus is on exploring the details and meanings of experience and on identifying important patterns and themes in the data. The richness of case studies is related to the amount of detail and contextualization that is possible if the writer provides a compelling and engaging profile of the case, with suitable examples and linkages to broader issues. Case studies are also multi-perspectival analyses. This means that the researcher considers not just the voice and perspective of the actors, but also of the relevant groups of actors and the interaction between them. Acknowledging multiple realities in qualitative case studies, as is now commonly done, involves discerning the various perspectives of the researcher, the case/participant, and others, which may or may not converge (Yin, 1994).

One of the strengths of this approach is that it uses a variety of research methods with multiple sources of data. This allows attention to minute levels of detail in specific contexts. It should therefore also be possible to gain insights into the subtleties of the particular situation. In this doctoral research, data is drawn from multiple sources. In line with an ethnographic method, it brings together *(*triangulates) multiple perspectives, methods, and sources of information (e.g., from module evaluations, external examiner reports, assessed work and discourse analysis) thus having the potential to add texture, depth, and multiple insights to an analysis and enhancing the validity or credibility of the results. This

type of mixed method design can increase the quality of the final results and provide a more comprehensive analysis of the phenomena that are examined (Robson, 2002). Given that things are studied as they naturally occur, the researcher is therefore not under pressure to impose controls or to change circumstances.

Case study data analysis generally involves an iterative, spiraling, or cyclical process that proceeds from more general to more specific observations (Creswell, 2003; Reason & McArdle, 2001). As we see from the discussion on the theoretical framework below, this research focuses the analysis on the general macro and meso levels first before moving to the more specific observations of the micro level. Case studies also tend to be selective, focusing on one or two issues that are fundamental to understanding the system being examined. Case study research therefore generally answers one or more questions that begin with "how" or "what" (see table one). In dealing with the case as a whole, the aim is to discover how the parts may affect each other. More specifically, the goal is to emphasise detailed relationships and social processes rather than focus on restricting attention to the outcomes from these. Questions are therefore targeted to a limited number of events or conditions and their inter-relationships. In this case study of WebAutism, socio cultural and activity theory, coupled with the communities of practice approach, define those events and conditions and shape the questions asked. Within the context of a case study method, these theoretical lenses are used as flexible units of analysis that enable the gaze to be trained in different directions and with different levels

of magnification to help us answer the questions that puzzle us (Russell, 1997).

2.5. Theoretical Frameworks

These theoretical lenses enable a focus on WebAutism as an activity system and a social unit where participants are involved in goal directed activities mediated by cultural tools and analysing contradictions and problems. This addresses human activities as they relate to artefacts, shared practices and institutions, and development of minds in context. The individual practitioner, the colleagues and co-workers of the community, the conceptual and practical tools and the shared objects are approached as a unified and dynamic whole. The theoretical outlook focuses the study on knowing interpreted in the context of doing and on consciousness and activity as united. Knowledge construction is situated in practice and the development of self is through participation in community.

Socio-cultural and activity theories can potentially be useful as tools to guide this study because they fit well with a case study design. Socio-cultural and activity theory enable a focus on organisational structures as well as on relations between people and how these might influence the construction of community. This can involve the study of a number of processes in understanding the development of productive learning communities. These can include infrastructure, resources needed for successful implementation, mediating tools and the way the learning space is mediated and used (Jones, 2004). Activity theory focuses on the social elements of a system (the activity set), which are community, rules and division of labour, with the emphasis being on how these

interact with one another (Daniels, 2004). The unit of analysis is on how joint activity is constructed, thereby allowing analysis of the social world. Activity theory seeks to analyse the development of consciousness within practical social activity settings with the first characteristic of an activity set being that it focuses on pursuit of a particular objective or activity (Engestrom, 1987). There are various generations of activity theory, with Engestrom's work representing a focus on the 'dialogic' aspects of activity and 'multi-voicedness'. These concepts will be explored further in chapters four and five, but for the purposes of this chapter, they signal an emphasis on how ideas form in dialogue, and secondly, the recognition that actions and voices are informed by many perspectives (Daniels, 2001). Engestrom (1999) sees these as changing both the participants and the system itself through contradictions and tensions.

Activity theory thus allows us to see WebAutism as an activity set built around the pursuit of gaining a qualification: the University Certificate (ASD). As such, it is an activity system with the motive of knowledge generation and it represents community building that is anchored in a wider network of practice, that of the ASD field. The questions to explore become whether, as participants interact with one another and with the tools and resources of the Virtual Learning Environment (VLE), their identities are both constrained and enabled by the tools and resources as well as by the roles that they have within the environment. This includes whether, through this interaction with one another and the tools, they can co-construct their current understandings through developing shared understandings and resources. In this holistic perspective, a learning

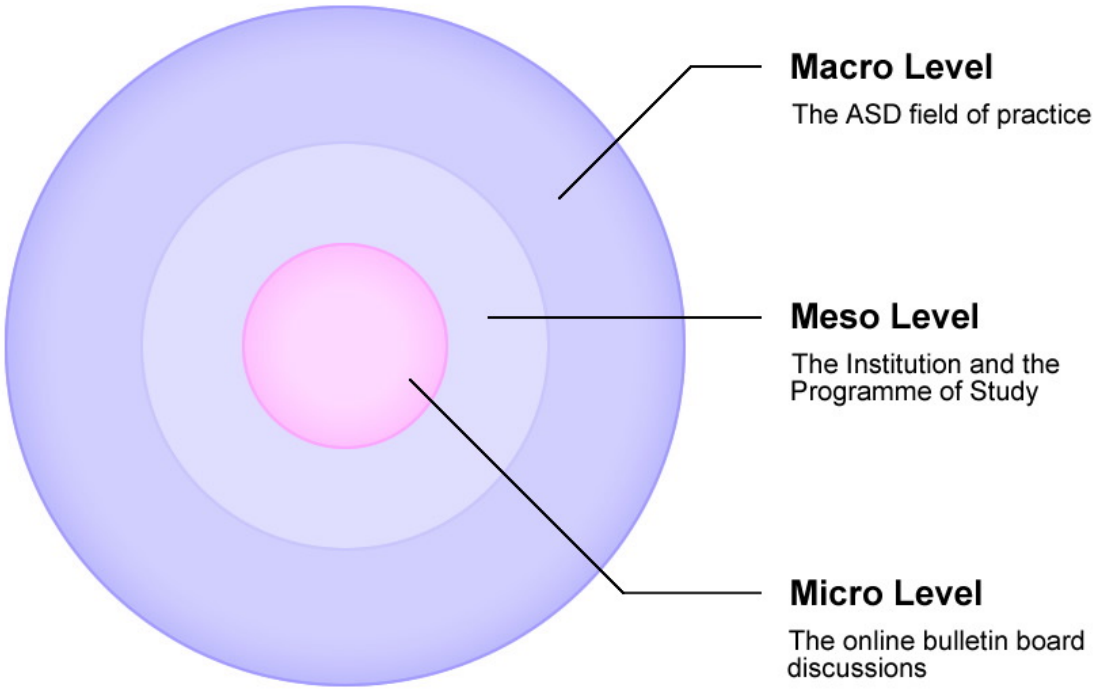
environment that supports collaborative learning integrates various artefacts and spaces for acting, and allows for diverse individual and social participation, which in turn may impact on how students act in the wider community of practice in the ASD field. Chapter five uses activity theory to focus analysis on organisational structures in the construction of the programme and on how different activity systems interrelate with one another.

In WebAutism, the activity system being studied is also the learning environment as a whole and the way in which the learning space is mediated and used to include the community of tutors and students. The students are involved in an activity directed towards an object with a certain desired outcome. In this context, they are involved in learning with the goal being to become better practitioners in the field and this becomes the object. This is embedded in the culture of the programme and this object (which is different from goals) is 'the constantly reproduced purpose of a collective activity system that motivates and defines the horizon of possible goals and actions' (Daniels, 2004, p. 190). The programme itself is rooted in learning theories inspired by socio-constructivist approaches (Bruner, 1966; Mercer & Littleton, 2007) and situated cognition (Lave & Wenger, 1998) and there is recognition that socio-cultural and activity theory can be used to explore the learning environment itself, in terms of the activity that takes place in that environment.

This in turn gives us the opportunity to understand learning both in terms of a micro-analysis of group interactions and in terms of a macro-analysis related to the socio-cultural context in which learning occurs (Jones, Dirckinck-Holmfeld &

Lindström, 2006; Dillenbourg, 2004). This perspective has much in common with Alexander's (2000) study of culture and pedagogy, in which he conducted a comparative study of primary teaching in five different countries. He conceptualised his approach as concentric circles: the micro-culture of the classroom, with its routines and rituals, the culture of the school (the collective values and unique way of mediating the values of the community), and the culture of the country, all of which are historically embedded. In relation to WebAutism, Alexander's concentric circles can be adapted so that the micro-culture is considered to be the online tutorial group and the routines, tasks and ways of communicating that arise out of that. The first circle represents relations between individuals in their tutorial groups in terms of how they are expressed through archived records of discussions that take place in the online discussion forums. Secondly, there is the culture of the programme itself, the wider community of all students, tutors and the course team as the second concentric circle. Finally, we are talking about the wider community of the ASD field in the UK, which is viewed as a wider community of practice (see figure three). The concern here is with how those different aspects interrelate with one another and how they influence the discourse itself.

Figure 3: The concentric circles, after Alexander, 2000



Jones et al. (2006) also propose that it is useful to divide an activity set into levels, incorporating macro, meso and micro and thus enabling granularity of analysis, locating activity systems at various layers of any given social system, including whole institutions. With this comes recognition that groups have clear social connections to larger networks. Thus macro broadly covers large scale institutional or policy processes. For this research, the macro level incorporates the wider world of the ASD training field. Meso points to the place of social practice as the locus in which broader social processes are located in small, local group activity (Schatzki, 1996; Schatzki, Cetina, & von Savigny, 2001). In this analytic form, meso is an element of a relational perspective in which the levels are not abstract universal properties but descriptive of the relationships between

separable elements of a social setting. These elements can be separated in both space and time and include the totality of resources on which the learners can draw. In WebAutism this can be taken to include the technology, technology support and the expertise of course team and tutors. It includes the commercial product that is marketed as a virtual learning environment, in this case the WebCT Virtual Learning Environment (VLE). This also covers the different components of the structure of the programme and includes how it was created and how technical, administrative and academic staff interrelate with one another. The aim is to understand how different components of the programme interact with one another and impact on students (see chapters four and five).

The third level of granularity is what Jones et al. (2006) describe as the micro level and this is focused on small group interaction with a highly local (not necessarily spatially local) setting. In this study, this micro level covers the tutor group and examines online bulletin board discussions with a view to drawing out what these tell us about the development of identity and practice. This is described as a contained experience where the learners might learn through exploration and manipulation of objects. The micro level includes the computer or other objects through which the learner is engaging. This study is particularly interested in how learning is mediated by tools. As described in the first two parts of this literature review, I start from the standpoint that learning is social and that language and artefacts are cultural, they are not located in individual minds. Although study of the tools traditionally can focus on both symbolic forms such as language and physical artefacts, this study aims primarily to focus on language

and dialogue rather than physical resources. The interest is in how the tool of online dialogue is used by students and what this tool can tell us about both the system itself and the productive learning that is taking place.

2.6. Productive learning and a community of practice

Russell defines learning as “expanding involvement- social as well as intellectual- with some activity system over time, rather than the internalisation of discrete information or skills” (Russell, 1997, p. 69). This provides me with a working definition of productive learning as a notion that challenges the essentially individualised explanation of practical learning offered by many writers and encompasses the learning processes involved in the changing practices of experienced professionals (Reeves and Forde, 2004). My definition of productive learning is that learning is inseparable from the experiences that produce learning. It is about exploring learning as a social phenomenon through an approach that tries to dialectically link the individual and the social structure of the programme and it shines the lens on the authenticity of the learning situation, with a focus on meaning and sense making. It is also concerned with how the socio cultural structures of the community mediate the development of the individuals from an initial novel state to a fully developed deeper participation.

This happens within a learning community, which I define as a community in which individuals learn together and there is co-construction of knowledge. However, this research is interested in whether students also form a community of practice. In a community of practice, individuals work together and connect with one another round joint activity focused upon domain, community and

practice (Wenger, McDermott and Snyder, 2002). A learning community therefore also becomes a community of practice when participants are involved in learning and that brings them together to co-construct knowledge and to talk about shared practices in their workplaces or day-to day life, in particular when there is evidence of mutual engagement, joint enterprise, shared repertoires and values and mutual interdependence (Wenger, 1998). Although WebAutism students clearly have individual and shared goals of becoming better practitioners and improving practice, it is the collective aspects of shared values, joint repertoires and mutual understandings that are of particular interest to this research. The purpose of this research is therefore largely to focus upon community measurement through examining i) how the learners appropriate the professional discourse, values and goals of the ASD carer (one measure of learning to be a practitioner in this context) and ii) what kind of collaborative engagement students show with each other's contributions (another aspect of learning to be a practitioner in this context). The study is particularly focused upon how students discuss, collaborate, share practice, participate in a learning community, draw out sets of values associated with the community, and their expertise in the field. As stated before, the key concern is with productive learning. Given the recognition that productive learning relates to expanding involvement within an activity system over time, an exploration of the extent to which students appropriate the discourse and values of the ASD carer, needs to start with exploring the values of the wider ASD field and the programme itself before undertaking detailed analysis of discourse, thus moving from the general

to the specific. This makes it necessary to identify the core values, skills and competencies that constitute 'good autism practice' before measuring the extent to which these values are expressed in the community. Hence, research questions are focused around productive learning by exploring the macro, the meso and the micro levels (see table one).

Table 1: Research Questions

Macro level
1. What are the skills and competencies that reflect what is considered to be good practice in the field of ASD? (Chapter 3)
2. Who are the students on this programme and how are they located in the field? (Chapter 3)
Meso level
3. How is the programme designed to meet the learning needs of students and how do students refer to competencies through the module evaluation process, and assessments? (Chapter 4)
4. How do the different activity systems come together in the creation of the programme and what are the constraints and tensions involved in the process of designing and maintaining the learning environment? (Chapter 5).
Micro level
5. How do learners appropriate the professional discourse, values and goals of the ASD carer (one measure of learning to be a practitioner in this context) and what kind of collaborative engagement do students show with each other's contributions (another aspect of learning to be a practitioner in this context)? (Chapter 7)
6. How do students move from peripheral membership to assembling ideas about community values and what it means to be a member? (Chapter 8)
7. How are online discussions influenced firstly by the selection of the topic of discussion (the discussion question) and secondly by the interventions of the tutor within the online discussion? (Chapter 9)

2.7. Action research

Before moving on to exploring the methodology in more detail, my dual role as teacher and researcher, in partnership with the stated aims of improvement of teaching and development of the programme, make it important to explain why the above approach rather than an action research approach has been prominent in this study.

The key point to make here is that an action research approach is a strong component of the delivery of the programme itself. The teaching team implement an action research cycle in relation to the programme. This action research approach recognises that action research is normally used in the context of teacher research and is seen to combine the action orientation of the teacher with the detailed analysis of the researcher (Lacey, 1996). In the teaching context it focuses upon curriculum research and development and the critical appraisal of classroom practice through 'action research' (Stenhouse, 1975). This also recognises that in action research, theories are not validated independently and then applied to practice but rather they are validated through practice and are about improving that practice (Elliott, 1981). It is unlike most conventional research in that most problems arise directly from practice. For Schon (1987), practice should be seen not only as the setting for the application of knowledge but also for its generation.

Action research is distinguishable in terms of its purpose, which is to influence or change some aspect of whatever is the focus of the research and it adds promotion of change to the traditional research purposes of description, understanding and explanation. In action research, improvement and

involvement are seen as essential, as is collaboration between researchers and participants. Like all other forms of research, it involves identification of problems, collection of evidence, analysis and diagnosis, interpretation using theory and the communication of findings to audiences. It is rooted in the view that we understand through involvement (Reason & McArdle, 2001). This usually takes the form of a researcher leading a group that identifies an issue, plans an action, implements the action, reflects on the outcomes of the action and identifies a revised plan of action. Generally there will be two or more cycles of action and reflection with the researcher (Creswell, 2003; Gall et al., 2003). So, once appropriate forms of action are identified they are implemented and their effectiveness closely monitored. If the intervention is successful, it necessitates a change in practice. This will in turn lead to new problems that need to be resolved and the entire process can be described as an action research cycle. This view of action research as a spiral or cyclical process is widely adopted (Kemmis & McTaggart, 1981).

In a pure form, this type of research includes active participation in the research and thoughts about researchable topics are seen as being developed collectively in formal or informal discussions. Users are then involved in collecting and analysing data. They should also be involved in discussions about findings and their dissemination. The choice of topic and processes of research are democratised and the research has wider ownership than the researcher him or herself. The users need to be given access to research findings. They need to

seriously consider them, make a decision and then implement. This sees change as a process, not an event.

In my teaching role, I work in partnership with colleagues to implement an action research cycle in relation to the WebAutism programme. Quality assurance processes and evaluation feature strongly in relation to the continued development of the course. The approach we use is an adaptation of the pure action research framework outlined above, in which users are involved in analysis of data and in identifying the improvement cycle. The WebAutism action research cycle is based upon the teaching team, the administrator and the e-learning team working together to identify appropriate forms of action or intervention that will help improve teaching practice. The action research cycle is implemented by module evaluations being sent to students after every module. A member of the team then promptly analyses the completed module evaluations and identifies action points and ways of improving the learning environment, based upon the feedback from the students through the module evaluation. The team discuss these points, agree on which points of action need to be acted upon and create an action plan for implementing changes. This is communicated back to students within the online programme-wide bulletin board. An adapted action research method is therefore undertaken in relation to the teaching.

In terms of this doctoral study, the teachers are still key stakeholders and socio cultural and activity theory enables me to look at how a number of factors impact on them. This includes the development and shaping of the objectives of the system, such as from the expected competencies in the field of ASD, external

sources such as the University teaching and learning strategy, or demands of quality assurance and ongoing curriculum developments. An aspect of this research therefore examines the processes of evaluation and moderation for quality assessment and includes me feeding back results of my research into programme development mechanisms and processes, which shapes these activities in an intervention like way. Parts of the research are therefore framed by action research (iterative spirals of design and evaluation) and the methods of action research are appropriate to this aspect. This is particularly true for the meso level. However, whilst this is true and ongoing research will report on this aspect in future work, this thesis focuses primarily on the development of a community of practice as evidenced through (chiefly) the online dialogue and these are the aspects I will mainly be reporting on at this time.

2.8. Research Design: An ethnographic approach

This research is interested in detailed descriptions of the experience of students within the specific culture of WebAutism and the social rules or patterns that govern it, and I want to bring to life or capture the internal workings of WebAutism and its culture to reveal the perspective of its members. The aims of this research are therefore about exploring what those perspectives and beliefs are, and the above literature review refines the questions outlined in the introduction further to include the issue of analysing how students appropriate the professional discourse, values and goals of the ASD carer, which is one measure of learning to be a practitioner in this context.

The most appropriate approach to answer these research questions is to use ethnographic research strategies that are empirical and naturalistic involving first hand sensory accounts of phenomena as they occur in real world settings (Reynolds, 1980). Ethnography has been described as a research methodology in which 'the search for universal laws is rejected in favour of detailed descriptions of the concrete experience of life within a particular culture and the social rules and patterns that constitute it' (Hammersley & Atkinson, 1983, p. 8). An ethnographic approach is holistic in that the aim is to seek to construct descriptions of complete phenomena and generate from the descriptions the causes and consequences that affect human behaviour toward, and belief about, the phenomena. I want to understand more about the programme and its students from the viewpoint of the people involved in it. This involves aiming for 'thick description' (Geertz, 1983) and it fits with Malinowski's notion of grasping 'the native's point of view' by understanding the point of view of participants in the community (Malinowski, 1922). For Schutz (1967) this is about grasping the inter-subjective meanings given to their actions by social actors. Cohen and Manion (1994) highlight that this perspective fits with the naturally concentrated action found in schools and classrooms where human beings are constantly adjusting, evaluating and bargaining.

The emphasis is thus on the study of social interaction in the natural setting of the community through observation and informal participation and conversation (Burgess, 1984). My role within this research is that of a participant observer in that I am analysing what occurs naturally rather than collecting data

in an artificial setting (Hammersley & Atkinson, 1983). In traditional ethnographic approaches the data is collected by researchers who behave as far as possible like the social actors they are investigating. Within this type of study, the role of the participant observer can therefore range from someone centrally participating in the community they are observing (the participant as observer) to the participant observer taking a more detached role (observer as participant) where there is not an attempt to experience, but to make close and detailed observations (Gold, 1958). Within this research, I perceive my own role to be one in which I am a participant observer who is part of the community with a very specific role within that. I nevertheless also try to stand back from that role to try to understand the perspectives of other members of the community by undertaking close observation of the community at a number of levels. There are tensions involved in this role and I explore these below.

2.9. My own positioned view

My account represents a positioned view. I have a close relationship with participants and I have an influence on what happens. I am not 'an outsider' who is removed from the research process. On the contrary, I am very much an active participant. Before I explore the potential problematic issues related to having a dual role as teacher and researcher, there are also potential strengths that arise from this and I will touch on these first. For example, I have pre-existing knowledge about the situation and the people involved and I know the learning environment well. I have an intimate knowledge that can enable me to draw connections and understand how the different components of the learning

environment impact on one another. Knowledge of the setting can be a distinct advantage as I have knowledge of the local culture and this can potentially help in analysis. It could be argued that this could give me a richer perspective of the issues and a depth to my understanding. Most of all, rather than trying to distance myself from the perspectives of the participants in the interest of objectivity, it enables me to work toward sharing their perspective (Mercer & Littleton, 2007). This issue of knowing a culture from within also potentially allows me to appropriate the students' competence systems and thus has the potential to enable a richer interpretation of observed language and events (Roth, 2001). This includes taking on board the views of the actors, including the programme team, regional tutors and students. It has a lot in common with narrative research, which is about hearing people's voices and researching the culture from inside, opening a window to their culture.

This dual role has led to few implementation problems. The students and tutors on the programme have been very supportive of the research, partly possibly because they trust that their feedback will have consequences and that the research will ultimately benefit future students who study the programme. Students and tutors have therefore given permission for data to be used and have also taken an active part in the research by completing questionnaires and commenting on work.

However, there are still clear tensions involved in this dual role and it is important to spend some time exploring these. My position means I am likely to have preconceptions about issues and solutions and I need to guard against a

few assumptions (Cohen & Manion, 1994). One of those assumptions is that my version of what could or should be implemented is necessarily right (Robson, 2002). Throughout this research I have become aware that many sensitive issues can arise out of carrying out research in my own institutional context and with my own students. I am aware that scrutiny can open colleagues to self-doubt and criticism. There is also the danger of confusing and merging the two aspects of teacher and researcher. This has been a recurring theme as I have been writing up findings and discussing them with my supervisor. Sometimes I blur the boundaries between my role as researcher and my role as lecturer in ways that leave the reader and myself confused.

The dual role has also made it particularly important for me to be clear about how my values and my outlook influence the way I approach the research. Whatever our paradigms, choice of methodology or methods, researchers have argued that we cannot ignore the way in which our own ideology, theories, frames of reference or world views, impact upon research (Alvesson & Skoldberg, 2000). In fact, some would argue that it is not possible to maintain an objective stance but that it is crucial to reflect on possible biases and be open and transparent about how conclusions are arrived at and that research can never be value free (Cohen, Manion & Morrison, 2000). Even before data are interpreted and analysed, methods of sampling, and design are likely to reflect the researcher's values. It influences the type of phenomena we choose to study, what we notice during collection of data and the way in which we analyse the

findings. No one is protected from political and cultural influence and researchers need to acknowledge their own ideology and pre conceived theory.

There are therefore clear tensions in this approach that should not be underestimated and I try to deal with these in a number of ways. Throughout the research I have addressed the notion of how the research impacts on others, be it individual team members, other colleagues involved in different aspects of the study, the students and tutors and potentially the wider communities in which the different participants are located. I have therefore focused upon consultation and permission throughout the research. I was aware at the start of the study of the importance of gaining active consent from students for particular types of data and the need to reassure students that confidentiality would be maintained at all times, that they could decide not to participate at any time and that the research would not impact on their relationship with any of the team members in any way. I therefore sent students a consent form and covering letter at the beginning of the year, before any research was started (see appendix one). This letter stresses the fact that I am keen to receive feedback from the students about the learning environment in order to enable improvement of that learning environment. Most importantly, it highlights that it is not a programme requirement to participate in the research and that students are free to withdraw at any time should they wish to do so.

Furthermore, the letter states that all information will be fully confidential and students will not be named or identified. It is hoped that this will go some way towards dealing with the potential problematic issue of students thinking that if

they do not participate, they might be penalised. The aim was to make it very clear that there is no advantage or disadvantage to participation and that participation is totally separate from grades. This notion of decoupling assessment from participation has been vital in this research given that any confusion in the minds of participants would compromise the validity or authenticity of the data itself.

Whilst there can not be full guarantees that some students may still worry about this, it is hoped that students might be further reassured by being told that feedback is anonymised. In the letter described above, I also made it clear to students that each return to the questionnaire, for example, will be coded with a number so that the person coding the data can not identify the respondent. I have also protected student confidentiality by ensuring that all contributions are anonymised, including names of schools and places. In addition, I did not rely on the research consent form alone for some aspects of the research. I worked on the basis that the consent form gave me permission to use data, but when it came to quoting students' postings form the bulletin board, I asked permissions separately to be able to do this. I emailed those students whose postings I wished to quote, again explaining fully that they had every right to decline. I also asked for explicit permission for a closer scrutiny of three students' roles online, as described in chapter eight.

This goes some way towards addressing the tensions linked with the possible position of power I have as programme of study coordinator and the ethical issues that arise from that. Some of the ethical principles that I have been

clear about upholding include the fact that the interests of the participants should always be protected, that I need to be aware of the danger of misinterpretation, that my students should give informed consent and that data protection legislation should be adhered to. On the issue of consent, I discussed ethical issues around informed consent with my team and supervisors and also ran my proposals by the School's ethical committee as well as consulting both the British Educational Research Association (BERA) and British Psychological Society (BPS) guidelines. The BERA guidelines state that voluntary informed consent should be sought in a manner in which people do not feel under duress. This should happen before the research gets underway. In addition to that it should be made clear to participants that they can withdraw their consent at any time.

Awareness of data protection legislation has also impacted on the way that the research has been conducted. There are legal requirements in the storage and use of personal data as set down by the Data Protection Act (1998) and these are adhered to. Participants' data are treated confidentially and anonymously, as there is a wealth of different data being kept, both for research, teaching and learning and for quality assurance purposes. I therefore worked closely with my academic colleagues to develop a robust system (for teaching and research) of maintaining a database whereby responses were collated, and the participants' identity was separated from the data as soon as the responses were collated. However, participants also have a right under data protection to see all data held on them. Participants were therefore given a number so that the data were traceable to the individual should the individual ask for them. This

approach to the management of the data was discussed with the University's data protection officer and he gave valuable support and assurance that this approach was diligent and in keeping with the Data Protection Act. The team also discussed the implications of the Freedom of Information Act (2005) and how this could potentially impact on the management of data and students' access to that information. Data have also been selected and recorded systematically so that if necessary they could be checked by others.

These mechanisms described above aim to go some way towards dealing with the tensions related to my own position. In addition, I have to some extent negotiated with those affected, kept the work visible and allowed those described to challenge accounts. Throughout the research, I have involved colleagues and tutors, at their request, through discussion about research findings at tutor development weekends. These discussions have been useful because they have enabled shared perspectives to develop about the consequences of the findings of the research including how these findings impact on how to improve the learning environment. One example of this is an in-depth discussion with tutors, which arose from findings about the role of the tutor and the question set. Tutors felt that we should be more explicit about building in a 'scaffolding' role for students on the programme and should refer students to how tutors should slightly adapt their support during their course of study.

2.10. Validity and reliability

However, these mechanisms alone are not enough to guard against bias and a further way of dealing with the above tensions relates to the methods

themselves and how these can check against bias and one-sidedness. In this study, the research design itself and the case study approach, coupled with triangulation of data collection and multiple analysis methods, contribute to internal validity (Yin, 1994) and also help counter the possibility that my own judgements are affected by my close involvement. Cohen and Manion (1994) highlight that this type of approach is about understanding phenomena as they occur; it is an ongoing process of making sense of what has been seen and heard so the influence of the researcher in structuring, analysing and interpreting the situation is present to a much smaller degree. Maxwell (1996) sees validity in this kind of research as inherent, not to do with procedures used to validate it but in relation to those things that it is supposed to be an account of. The aim of this research is therefore to form an archive of descriptive material sufficiently rich to submit to subsequent re-interpretation. One of the ways of guarding against a one-sided interpretation in this research has thus been to involve other people in the design stages and to situate the student voice very centrally within the research itself by building feedback from the participants into the research process and placing a high emphasis on the voices of participants, in particular students and tutors.

Reliability is aimed for by ensuring that there is triangulation of voices and perspectives. I try to guard against my own voice overwhelming the voice of participants. This can be problematic in ethnographic research as we deal with multiple realities and we need to show that the research represents those multiple constructions adequately, that participants recognise they are valid.

Respondent validation is therefore important and has been sought by involving participants in commenting on the work at various stages. When designing the questionnaire, for example, I checked my research instruments with other colleagues and my supervisors. I have also conducted pilot studies, both of questionnaires and of discourse analysis. When sending a questionnaire to all students, for example, questions were checked with respondents and with other colleagues for ambiguity. This included taking feedback from colleagues to check that questions were as factual as possible. I have also included other people's perspectives in the analysis of the data itself. Discourse analysis has been conducted in conjunction with my supervisor and checks made for inter-rater reliability through arriving at consensus by working together on samples of text (see chapter six). I also checked for intra-rater reliability by going back to data at different stages and checking whether I agreed with my own previous coding.

Furthermore, Guba and Lincoln (1994) argue that the way to judge this type of research is to ascertain whether the findings are grounded in the data; whether inferences based on the data are logical, whether the category system is useful and whether there is clarity; whether the explanatory power and the fit to the data are realistic and finally, the degree and incidence of inquirer bias. In a similar vein Hammersley (1992) sees validity as being tested by whether the kind of evidence presented is central to the arguments of the research. He advocates the need for coherence. Firstly, the argument and evidence need to cohere. We need to identify the main claims made by a study, to note the types of claims these represent and to compare the evidence provided for each claim with what

is judged to be necessary, given the claims' credibility and plausibility. We need to identify the effects on data and separate out those effects.

I concur with Guba and Lincoln (1994) who have argued that traditional means of establishing reliability are inappropriate in this context. Design is likely to be emergent and thus research teams conducting enquiries independently are unlikely to reach the same conclusions. We also need to question the extent to which any analyst involved in case study research is justified in generalising from a single instance of an event that may be, and probably is unique. Given that the role of the researcher as integral to the data collected, this means that replication of this type of enquiry is unlikely. However, the thick description aimed at here could enable someone interested in making transfer to reach a conclusion as to whether that transfer can be contemplated in relation to their research (Guba & Lincoln, 1994).

2.11. Methods

I also work on the basis that a multi-method approach and triangulation will enable me to guard against bias. By comparing two or more views of the same things, data from different sources can be used to corroborate, elaborate or illuminate the research in question. This enables a more all-rounded view of the phenomena by examining them from a number of vantage points, to be used critically to develop and test ideas about the existence and nature of these phenomena (Maxwell, 1996). I recognise that each method provides its own distinctive perspective and each can look at the issue from a different angle. Findings from one method can allow them to be checked against the findings

from another. This can enhance the validity of the data and can give confidence that data has some meaning across methods as long as meanings emerging from the data are tested for their plausibility (Miles & Huberman, 1994). It allows the possibility of identifying and collecting new or potentially contradictory data that can be interpreted in the light of consistency with the theoretical model and can either demonstrate how data can be accommodated by the model, can suggest changes to the model in light of new data or can suggest further work that might help resolve outstanding issues.

I therefore analyse a number of data sources to enable me to understand the community. Many of these data sources involve written information about the community and a multi-method approach is used to elicit data from a number of stakeholders involved in the community. Thus a questionnaire is used to gain feedback from students so that we have information about their demographic profile. Other data collection methods include module evaluations, external examiner reports, minutes from meetings, tutor feedback and informal interviews with members of the programme team, tutors and students. These provide the data for the analysis of the activity sets that deliver the WebAutism programme in chapter five and for the analysis of pedagogy and student learning in chapter four. These are treated as ethnographic sources of data as they are central to the community of WebAutism. The most naturalistic research method consists of in-depth analysis of students' archived online bulletin board discussions and a separate chapter explains the discourse analysis approach taken to this (chapter six).

We see from the above points that in deciding on appropriate methods to be used in this study a pragmatic stance has been taken, drawing on a mixed methods methodology (Robson, 2002). One of the strengths of this approach is that I can use a variety of research methods with multiple sources of data. This allows attention to minute levels of detail in the specific context but it also offers methods for production of less fine-grained and more standardised data. This type of mixed method design can increase the quality of the final results and provide a comprehensive analysis of the phenomena that are examined (Robson, 2002). This is aimed at improving the robustness of the design through triangulation of evidence from a variety of different data sources each of which may best be analysed in one or more different ways to help determine the role of factors at macro institutional, micro group, and individual levels. Multiple sources of evidence are used in order to compare and corroborate the evidence, selecting and using appropriate techniques, whilst emphasising the limitations of any one approach.

The data collection methods in this study are thus closely tied up with both the purposes of the research and the research questions themselves. This is done in recognition that theoretical debate has failed to establish one single method as the best for all situations. Each method approaches data with certain assumptions and each has inherent strengths and weaknesses. Hodkinson (2004) feels we should focus on how interpretation of data can lead to better understanding rather than debate the objective purity of specific methods. Here he makes the case for an eclectic stance where either or both quantitative and

qualitative methods should be selected to suit particular research purposes. This involves choosing methods according to what is important for the particular project, applying them wisely and modifying them as the project evolves (Glassick, Huber & Maeroff, 1997). This type of mixed research design is not without difficulties and complications. As there is no ready-made formula to follow, it can be demanding on the researcher. It expects a lot of the researcher in terms of flexibility, an open mind, being a good listener and showing sensitivity.

2.12. Summary

This chapter has undertaken a review of theoretical perspectives and the research design. This has included a literature review of the research context, and a justification for why a case study design was chosen within an interpretative paradigm using an ethnographic approach. The theoretical frameworks of socio cultural and activity theory were described in order to assess the extent to which these would be able to help answer the research questions. This in turn provided a justification for the research design, which is based upon a mixed methods approach. The research questions were identified and tensions were explored in relation to engaging in the study as a 'participant observer' before highlighting challenges relating to validity and reliability.

CHAPTER THREE: THE MACRO LEVEL ASD FIELD OF PRACTICE

3.1. Introduction

Given that the socio-cultural tradition highlights the need to locate studies in the social conditions, culture and context in which they are placed, the purpose of this chapter is to describe the context, or the macro level, of the WebAutism case study. The context of a case study can clearly be described at a number of different levels and a broad definition suggests that it is the 'socio-cultural context in which learning occurs' (Dillenbourg, 2004). Thus, Jones et al. (2006) have referred to the macro level or context as it relates to the wider field of policy-making and institutional change whilst Alexander (2000) suggest a definition that is wider still, relating to the culture of the country. In terms of the context for the WebAutism case study, we need to take into account that culture and context are clearly complex concepts with both historical and dynamic aspects (Mercer & Littleton, 2007). For example, there are currently major changes in the UK in relation to education more broadly and to special educational needs more specifically, as well as in Higher Education itself. This chapter could therefore potentially cover a vast area and many nuances in debate. However, there are also space limitations so decisions need to be made about setting clear parameters for the context or the macro level in order to only cover issues that are of direct relevance for the research and its aims.

If we are to assess how students on WebAutism are developing and learning as practitioners then we need to build some understandings of the expectations of the field and how the field views notions of good practice. Given that one of the key aims of this research is to evaluate the extent to which WebAutism meets the aim of enabling students to develop the skills and competences that are considered good practice in the field through building a community of reflective practice, the parameters for deciding what constitutes the context or the macro level need to be tightly defined according to these issues in this literature review. Therefore, whilst I recognise that Continuous Professional Development (CPD) for people who care for or work with individuals with ASD happens within the parameters of a broader education system, there is not space here to deal with all the many complex aspects of governance and policy in which students are situated. In this chapter and for the purposes of this research, the macro level is therefore defined as encompassing the wider world of the ASD training field in the UK due to the fact that the focus of the study is on learning processes of students embarking on a CPD programme at a UK Higher Education institution and given that those students are embarking on study to develop their practice in the field.

I use the terminology of CPD and training interchangeably in this chapter despite the fact that both terms have limitations in this context. Firstly, the term CPD generally covers the deepening of knowledge and skills for professionals and practitioners and is not perceived to cover development opportunities for parents and carers (Boyle, While & Boyle, 2004). It therefore has limitations in a

context such as this, which also focuses on increasing knowledge and understanding of parents and carers. Secondly, the term 'training' sits uncomfortably with me in that it evokes connotations of instilling certain behaviours in people, thus going against the grain of the conceptual basis of the WebAutism programme, which aims to encourage active, reflective and experiential learning (Jordan & Guldberg, 2002). However, these terms are used widely in the field and it is difficult to replace them without changing the way that other people use the terms so the terms will be used whilst bearing in mind their limitations.

The parameters for this review are fourfold in that the review highlights the specific difficulties and the resultant support needs of individuals with ASD, examines government strategy and policy in the field, explores how professional bodies address the issue of implementing policy, and finally assesses how strategic developments impact on understanding of the training needs of the aforementioned group including the type of content which the field considers important. This sets a framework for exploring the demographic profile of the WebAutism student group, thus giving us a clear sense of where the students are situated in terms of the background and settings they work in, including their training needs. These data locate the students in the broader movement of which they are a part and are a useful reference point for subsequent chapters which explore how students respond to the learning environment and how they work together to become a community with shared values and repertoires. Findings from these data are discussed in relation to key themes identified by the literature

review. This literature review is based upon close reading of research reports, papers on training needs from peer reviewed journals as well as strategic government documents and developments undertaken in the last five years in the field of ASD training.

3.2. Autism spectrum disorders

This field needs to be understood in the context of a rising number of individuals being diagnosed with the disorder. Current figures for the UK agree with other epidemiological studies that ASD, when broadly defined, currently affects around sixty per ten thousand children under the age of eight (MRC, 2001; NIASA, 2003). It is a complex spectrum disorder (Wing, 1996) and all individuals with ASD share a common core of difficulties that define their condition and differentiate it from other conditions. The person with an ASD will have major impairments in three areas of development (Wing, 1996) and will show a different developmental profile from the general population. Jordan (1999) identifies these impairments as relating to social and emotional understanding, communication and flexibility of thinking and behaviour. It covers a wide range in terms of presenting features, co-morbidity with other disorders and with widely differing levels of severity (Jordan & Jones, 1999).

The above framework has also led to a growing recognition of the different ways in which an ASD affects people at different levels of cognitive ability and at different ages and stages of development (Howlin & Moore, 1997). Personality, personal attributes and difficulties vary too so there will be a wide range of needs depending on how each of these elements come together in an individual

(Jordan & Powell, 1995). ASD is used to cover a number of subgroups, which have the triad of impairments in common. This is usually taken to include Asperger Syndrome (AS), and autism and pervasive developmental disorder, not otherwise specified (Jordan & Jones, 1999). Individuals with AS are generally more intellectually and linguistically able than those in other categories although they share the triad of impairments.

There are a number of theoretical perspectives in the field of ASD, which account for the difficulties experienced by individuals with ASD. Four key theories have been advanced in addition to the triad of impairments to explain some of the key difficulties faced by individuals with ASD. These include theory of mind, which explores the difficulties individuals with ASD have in reasoning about the mental states of others (Baron-Cohen, 1995); executive functioning, which refers to the difficulties individuals can have in functions such as initiating, sustaining, shifting and inhibition/stopping (Ozonoff, Pennington & Rogers, 1991; Denkla, 1996); and central coherence (Happé & Frith, 2006), with its emphasis on the difficulty in integrating pieces of information into coherent wholes, including the ability to reason about and to understand mental activities, thoughts, beliefs and feelings. Finally, inter-subjectivity (e.g. Jordan, 1999; Hobson & Lee 1999) emphasises the importance of emotional engagement for meaningful learning and suggests that many processes presumed to be purely cognitive are part of a larger dynamic system of affective processes (Schopler & Mesibov, 1995). Crucially, Jordan and Powell (1995) argue that people with ASD lack a sense of

experiencing self as a necessary element of one's moment-to-moment self-awareness in one's perception of the world.

It is recognised that individuals with ASD will show developmental abnormalities in some or all of the above areas and that these difficulties set a framework for meeting the support needs of these individuals (Happe & Frith, 2006). In addition to the above cognitive and inter-subjectivity theories, people with ASD also show significant differences in sensory perception. In 1974 Delacato studied those differences and, more recently, Bogdashina, through a review of personal accounts of high functioning people with ASD, has found a specific (but variable) pattern of sensory impairments in this group (Bogdashina, 2003). This is supported by accounts of people with ASD themselves which have suggested that they might explain some behaviours such as self-stimulation, self-injury, aggression, avoidance, rigidity, high anxiety, panic attacks, and other signs of chronic anxiety and stress (Williams, 1998; Lawson, 1998). The sensory differences in ASD are often overlooked but some consider them central to the disorder (Bogdashina, 2003).

There are a very high number of publications dealing with the effects of having an ASD and outlining the difficulties associated with the disorder. A wealth of publications by young people and adults with ASD highlight that their experiences have led them to feel misunderstood, and that they do not belong (Sainsbury, 2002; Lawson, 1998, Jackson, 2001; Blackburn, 2000). This point has also been emphasised by children and young people in a recent review of the needs of children and young people with AS, who drew attention to the lack

of understanding of their condition and their frequent experiences of teasing and bullying (Jones et al., 2006). The challenges posed by ASD are thus often multi-faceted and complex and a large proportion will have additional support needs. It is now widely accepted that the most crucial aspect of supporting a person with an ASD is that those working in the field need to develop a sound knowledge of the condition in terms of understanding the effects of having an ASD on development (Jordan & Powell, 1995; Gillberg & Peeters, 1999).

3.3. Strategic developments in the field

Individuals with ASD are likely to spend time in a variety of different settings including education, health, social work, respite and residential facilities, as well as a variety of living and workplace situations, and many reports have suggested that professionals who come into contact with individuals with ASD need adequate training and the knowledge to draw upon methods and programmes that are adapted to these particular students' needs (Mackay & Dunlop, 2004; DfES, 2001a; DfES 2001b). A very large number of personnel across a number of professions are increasingly working with people with ASD both in mainstream and specialist settings across the UK (MRC, 2001). There is general consensus that although there has been substantial progress in recent years, there are significant gaps and there is the need to extend training opportunities.

The Autism Research Coordination Group (ARCG), for example, a cross-parliamentary group consisting of royal colleges and voluntary groups as well as major funding organisations, recently stated that there needs to be a statutory requirement that all professionals who work with people with ASD should receive

awareness and job-specific training in ASD as part of their CPD (ARCG, 2006). This encompasses those working in the health, social care, education and criminal justice sectors. Similarly, The National Autism Plan (NIASA, 2003), the National Training Framework for Scotland (Mackay and Dunlop, 2004) and the Welsh strategy (Welsh Assembly Government, 2007 are now all addressing the need for a coordinated approach to training, or a strategic plan to ensure inclusion of all relevant professional groups, as well as the provision of training over time in the field.

The 'Good Practice Guidance for ASD', produced jointly by the Department for Education and Skills and the Department of Health (DfES, 2002) highlights that training needs to be ongoing, including the identification of new perspectives and approaches, so that all professionals need to update their skills and knowledge. Specific recommendations arising from this report include the need for an ASD training policy that is regularly monitored and reviewed; consultation with all sources of local ASD-specific knowledge, such as parents and specialist providers from the voluntary and statutory sectors, in devising training packages; and a local audit of existing skills, ASD qualifications and training needs to inform planning for meeting these needs (DfES, 2002). This includes recommendations for the involvement of parents and specialist providers in auditing the training needs in the area; mechanisms for dissemination of knowledge gained from training through feedback to other staff and evaluation of the effectiveness of training (DfES, 2002).

The National Autism Plan for Children (NIASA, 2003) also contains detailed recommendations on training. These guidelines were produced by a working party set up by the Royal College of Psychiatrists and the Royal College of Paediatrics and Child Health. The working group overwhelmingly comprised health professionals, although it did contain representatives from the Department of Education and Skills, the Regional Partnerships set up by the DfES and the British Psychological Society. The focus was on aspects of ASD within a health context. The report, nevertheless, contains many proposals regarding training and it sets out illustrative 'minimum standards' for a range of relevant professions.

Although many of the recommendations in this are specific to particular professions, a number of general issues came out of this report. One recommendation is that locally available ASD training should be a requirement for all who have daily contact with individuals on the spectrum. Other recommendations are that all local provisions should keep a database of the ASD knowledge and experience of staff since this information would increase parental confidence in provision; a national network with a focus on ASD training should be developed; a national multi-agency group should agree and monitor national standards for training programmes; ASD awareness should be incorporated in the core training curriculum of each professional group and at least one person in each professional group in every area should develop special ASD expertise. Training should be available for parents, carers and families (NIASA, 2003).

3.4. Defining good practice

The above developments are taking place within the context of 'Every Child Matters' (2003), which emphasises the need for multidisciplinary working and explicitly recommends joint training across agencies. Although many of these reports focus on staff working in the educational field, there is nevertheless increased recognition of the importance of multi-professional training more broadly, to ensure that there is a coherent plan for addressing the needs of those with ASD. The above reports highlight the need for training at all levels, that core training is needed across disciplines as well as specific service oriented understandings and that whole service training in ASD is needed.

There has been considerable progress in recent years in the UK, in terms of identifying the type of provision that can be considered to be 'autism friendly'. The recently re-named DfES, The National Autistic Society (NAS), and the West Midlands Regional Partnership (FREDA and Jones, 2006), for example, highlight core standards by which assessment can be made of a service. These stress the importance of a specialised knowledge and understanding of ASD; that this understanding should consistently inform the organisation, the resources and management of the organisation; and that the knowledge and understanding of ASD should consistently inform all aspects of practice and individual assessment. DfES guidelines also stress that all practitioners need to have an awareness of different approaches and strategies to make informed choices about caring for the person with ASD, including expertise across a broad range of therapeutic approaches. They also stress the importance of liaison and

partnership with families in planning how to meet learning needs, including setting clear goals for the person with an ASD towards independence and taking on board the views of the person with an ASD in such planning, including working as part of a team with people from other agencies.

In addition, in discussing provision for adults with ASD, Morgan (1996) highlights the need to: take into account the perceptions of the person with ASD; empathise with the perspective of people with autism in order to address the issue of service design; be responsive to the current and changing needs of service users and measure the quality of the service by looking at how the service addresses the social, physical and emotional well-being of the service user. Morgan (1996) stresses the importance of practitioners holding an ASD specific body of knowledge and that this knowledge should be consistently applied to the way the service is organised and delivered and to the work of individuals. In the education setting, this translates into a recognition of the importance of ensuring the curriculum of the child with an ASD is tailored to meet his or her needs, and that the school environment is modified to take account of the difficulties with sensory stimuli experienced by some children with ASD.

These issues are being raised in a context in which knowledge and understanding of ASD have developed significantly in the last five years (Jones et al., 2006). It is generally accepted that training is the key to successful placement for individuals with ASD (English & Essex, 2001) and that an understanding of ASD is essential when working with children and young people with an ASD (Jordan & Powell, 1996). Nevertheless, it is widely recognised that

identification and provision, while still requiring extensive development, have expanded at a much faster pace than training, with the result that in this particular field there are many key personnel in every profession who lack the necessary foundation of knowledge and skills (Mackay & Dunlop, 2004).

3.5. Current training programmes in the field

Currently there are a number of training programmes available for practitioners and parents in the field (Mackay & Dunlop, 2004). This provision of training for ASD throughout the UK is diverse in terms of structure, content, the professional groups targeted, the range of training providers and the extent to which training has a principal focus on ASD. It varies from individuals working locally in health, education or other services to university departments and large voluntary organisations with extensive national training programmes. These training programmes include training that ranges from one-day inset courses to those that run over several days as well as more long-term courses. It can take the form of work-based training, in-service, informal learning through observation and experience, through to training in specific interventions and university level courses, such as those run at University of Birmingham, University of Strathclyde, University of Ulster and Sheffield Hallam, St Patrick's College and Queen's University, Belfast (as listed regularly in the Good Autism Practice Journal, 2007).

In addition to the type of training listed above which focuses on general training designed for practitioners to understand the needs of a person with an ASD and draw on strategies to support that person, there are also training

programmes that offer training in specific approaches and interventions in the field. Examples are the TEACCH (Treatment and Education of Autistic and related Communications Handicapped Children) approach (Schopler & Mesibov, 1995), the Picture Exchange Communication System (PECS), (Bondy & Frost, 1994) and ABA (Applied Behaviour Analysis), (Lovaas, 1981) just to name a few. Some specific training programmes for parents and carers have also been developed post diagnosis. These include programmes such as Earlybird (Shields, 2001). Given that these are training programmes for specific interventions, and given that this research is concerned with identifying general training needs rather than specific training needs regarding specific interventions, this literature review focuses on the general issues.

3.6. Gaps in provision

Although major gaps have been identified at every level and across every sector, Mackay and Dunlop's (2004) report on training needs in Scotland highlights the fact that training appears to be least adequate for staff in generic services such as mainstream schools. With the increasing move towards inclusion in mainstream schools and in society in general, it is likely that the proportions of individuals with ASD provided for in these settings will rise. There are therefore significant training issues for practitioners in this group, as well as at every other level. In these contexts, it is still the case that many teachers have limited experience and training in working with children with special needs (Myles & Simpson 2002) and many parents have highlighted that family members should be supported by trained and knowledgeable staff (Eccles & Harold, 1993).

While, as would be expected, those who work most of their time in this field are on the whole better trained, Mackay and Dunlop's report (2004) highlighted the clear implications arising from the very low levels of training received by those practitioners in mainstream schools who have the smallest ASD workloads. These practitioners represent the overwhelming majority of respondents to Mackay and Dunlop's report, but they also represent the settings where most individuals with ASD are likely to be placed, namely, in mainstream schools and other generic provision. The young person with an ASD in that situation is as likely to require specialist input as in any other setting (Jordan & Jones, 1999).

Although the DfES guidelines highlight the importance of working with parents and families, and there is a mention of the need for training for carers and parents, there is little general focus on their training needs in the literature (DfES, 2002). Families often look after, care for and educate the person with an ASD for a much larger part of the day than professionals, yet identification of their training needs is rarely mentioned. There is much literature on the effects of AS and ASD on the family (e.g. Higgins, 2005; Quine & Pahl, 1997); the stress of families (e.g. Dumas, Wolf, Fischman & Culligan, 1991); the frustration of parents (e.g. Hutton and Caron, 2005) and dissatisfaction with diagnosis and intervention (e.g. Smith, Chung & Vostanis, 1994). Much research has found that parental stress can be associated with the relationship between parents and professionals. Thus delay in achieving diagnosis causes additional pressure on families (Quine & Pahl, 1997). This is particularly associated with families recognising symptoms and then having to persuade others, including medical

personnel (Gray, 1994). Smith et al. (1994) found that when parents asked for help, more than a third were told not to worry or to return if problems persisted. Howlin & Moore (1997) describe how many parents have serious concerns at an early age yet only ten percent obtained diagnosis when they first sought advice. In addition to this, families interact with a number of different agencies and this can cause stress, particularly given that that families were likely to get six different services from four or more agencies (Kohler, 1999).

Yet many research studies have found that parents can be effective in teaching and maintaining skills (Eccles & Harold, 1993; Spann, Kohler & Soenksen, 2003). Studies have identified the need for greater parent involvement in interventions (Di Pip-Hoy & Jitendra, 2004) and parents' role in enabling greater generalisation and maintenance of treatment gains (Koegel, Koegel & Schreibman, 1991). Whilst researching outreach provision for pupils with ASD, Glashan, Mackay & Grieve (2004) found a positive relationship between parents' knowledge and involvement in school and the success of the placement for children. Indeed, the lack of recognition received by parents has been considered to be a barrier to inclusion (Clements, 2004). Spann et al. (2003) indicate that, despite research showing the benefits of parental involvement in education, very few parents have any involvement in developing objectives, interventions or methods of evaluation.

Parent involvement is therefore an important component for programmes designed to improve educational outcomes and it is recognised that ongoing parent and teacher collaboration is an essential foundational element in the

development and implementation of intervention programmes (Myles & Simpson, 2001; Safran & Safran, 2001). Recent research has also highlighted the positive resources that families can offer. The Hero's story (Fleischmann, 2005) examined thirty-three self-published websites, which were written and constructed by parents of children with ASD. The study showed that the Internet allows stressed parents to network and to forge relationships that help overcome a sense of isolation. It describes how parents go through a process of coping and emerge from that wanting to help other parents. The emphasis is on gaining knowledge and learning, embarking on a path of empowerment and coping with adversity. Although research has focused on both the stresses and pressures on families as well as identification of the positive roles that families can play, there is a gap in the research literature in relation to identifying the training needs of carers and families and addressing this in planning and strategy development.

3.7. The content of training programmes

Several reports have emphasised that a minimum requirement needed for all staff working with children and young people with ASD is a basic knowledge of the triad of impairments and their educational implications (e.g. English & Essex, 2001; DfEE, 2002). There is also recognition in the field that the needs of children and young people with autism are diverse and no single training package will be able to fully meet those needs as there are no single approaches that will be suitable for all pupils with an ASD. Staff need to be able to adapt their knowledge and skills to suit the individual pupil and situation (English & Essex, 2001). However, the above literature review highlights that there are

commonalities across children and adult services in terms of the type of knowledge and skills that are considered important for practitioners to develop. In terms of knowledge and understanding, the above reports highlight the need for people to have knowledge of the triad of impairments and of theories that highlight the difficulties people with ASD face, including cognitive and psychological theories and sensory difficulties (DfES, 2002; NIASA, 2003).

Furthermore, the reports highlight a range of skills-based competencies that practitioners need to develop, including awareness of the range of differential diagnoses and assessment procedures and their potential implications for the person with an ASD; understanding of principles of service organisation and management including good practice guidelines; understanding how the service addresses quality of life for the service user and the need to know and understand alternative methods of adapting environments to take account of sensory difficulties. Practitioners need to be able to apply understanding of good practice guidelines within multidisciplinary and team-working contexts, to apply knowledge to tailor programmes to meet the needs of the individual; and they need to be able to set clear developmental goals including evaluating and monitoring the ongoing need for specific adaptations dynamically over time. These include the need to be able to imagine likely difficulties for, and have empathy with, the needs of particular individuals with an ASD (DfES, 2002).

Recently, the Forum for Regional Development, Autism, West Midlands (FREDA) published a regional training policy and framework outlining general principles that should underpin ASD training (FREDA and Jones, 2006). The

group devised a set of competencies (knowledge and skills) that could be used to analyse the content of training whilst nevertheless recognising the evolving and dynamic aspect of needs of children and families over time. This training framework proposes four levels: pre-foundation, foundation, core and extension. To take the top level of extension as an example, these set of competencies focus on four key areas in which participants need to develop both knowledge and skills. The four areas include diagnosis, psychological functioning, strategies and interventions and multi-agency work. With each of those four areas, measurement of knowledge and skills relate to how the person uses this knowledge in their practical day-to-day understanding of the individual, or in their knowledge of the processes they can use to apply this knowledge. Skills are therefore associated with ability to implement. One example of this is the ability to make analysis of the communication needs of an individual with an ASD and to make recommendations as a result of this. In order to do this, the carer or practitioners needs to have knowledge of strategies, instruments and ideas about how to assess communication needs of an individual with an ASD.

3.8. University and School strategy

In the macro level, I have so far focused attention specifically on the wider field of ASD practice as the discourse and dominant values of this national field shape the activity system of WebAutism at the local level. By focusing on the ASD training field, I am able to delineate the social contexts that are crucial to practice. ‘For instance the classroom could be described as a contextual social space where the teacher and the pupils enact teaching and learning on the basis

of a set of norms and values that form the particular modus vivendi for the group concerned' (Reeves and Forde, 2004, p. 90). The primary focus of this chapter has been on the 'modus vivendi' of the autism field of practice. Nevertheless, we need to take into account that the pedagogy of WebAutism was developed within the framework of the strategic outlook of the School and University.

At the time, the work of the University of Birmingham, particularly through provision in the School of Education, already contributed significantly to widening participation and lifelong learning agendas. The University's strategy for development in learning and teaching at the time (and it has been developed further since) recognised the need to respond to the challenges and opportunities represented by the rapid growth in student numbers and the plans for further expansion in Higher Education (HE) and Further Education (FE). The strategy acknowledged that learning is a continuous process offering opportunities and facilities for life-long learning, rather than a once-and-for-all event. The development of WebAutism programme was thus supported by the wider institutional recognition that more students will come to higher education via non-traditional routes and with different skills, prior qualifications, expectations and needs. There was also recognition of the increased demand, locally, regionally and nationally, for continuing professional development provision and the development of new technologies creating new possibilities in learning, teaching and assessment, including borderless education and e-learning. The development of the WebAutism programme therefore had the full support of the School and the University as it was seen as a key component of that strategy.

This research was furthermore influenced by the strategic vision of the institution, which encompassed a recognition of the importance of integrating research and scholarship with the learning and teaching strategy.

3.9. The WebAutism students

This raises the question of the type of programme that can meet the above parameters. WebAutism is located in the above context and has been mentioned as an important part of training both in the National Autism Plan and in the Scottish Report (Mackay & Dunlop, 2004). WebAutism, as will be seen in the next part of this chapter, draws students from a wide range of disciplines and services and provides a practice-based programme of study that can also act as a springboard for further study. It is crucial that we learn from training programmes that have been undertaken in the field so that we can start identifying what practitioners need in order to ensure the training meets needs and impacts on knowledge, outlooks, perspectives and ultimately hopefully on practice.

WebAutism offers the potential to undertake a unique evaluation of an ASD programme in the field using the frameworks of socio-cultural and activity theory which take into account not only the way that an individual might progress in their learning, but how the community as a whole develops collective and shared values. This enables focus on the intellectual development of students in a way that emphasises the shared, situated and social experience of practitioners in the field (Reeves & Forde, 2004). These levels then interrelate with the communities of practice framework which is primarily concerned with uncovering the culture of

a community and the interrelationship between culture and identity with a particular focus on how participants construct meaning (Wenger, 1998). The next chapter outlines the underlying pedagogy of the WebAutism programme, and explains how socio-cultural activity theory and social theories of learning have influenced the construction of the programme and in turn set a framework within which to conduct research on it.

However, before doing that, the remainder of this chapter examines data about the background of the students. This includes an analysis of learner characteristics that take into account factors such as age and experience, whether people are balancing other commitments and what problems and situations they might be facing that are likely to make them want to undertake this study. This helps build a knowledge base about the entry skills of the participants; their experience of ASD; their previous training; their client group, the setting, professional discipline and role (e.g. education, health), their expectations of outcomes and their degree of involvement with a person with an ASD. This can then provide a useful reference point for conducting research on their learning through their study of WebAutism.

3.10. The questionnaire

This analysis is largely based on a self-completion postal questionnaire sent to all students studying the University Certificate (n= 184) (see appendix two) so it represents a readily identifiable population. The questionnaire elicits data about the gender, age range of students, ethnicity, disability, whether they are parents or practitioners, whether they work with adults or children, what type of settings

they work in and their length of experience in the field. It also asks for information about their reasons for undertaking the course and the extent to which they have already received training in the field.

The purpose of sending out the questionnaire was in part to collate demographic knowledge about the students that was not already available through other means (such as admissions data); and in part to gather information about their reasons for embarking on the programme, their current levels of training in the field and their ICT skill levels. This information was gathered in order to gain some understanding of the contexts in which students work, including their needs and aspirations. It could therefore provide a contextual basis or framework for understanding where students were located in the field and for providing a context for later evaluation of the pedagogy of the programme and student learning experiences.

Given these aims, the questionnaire posed multiple-choice questions with more open questions that also gave room for further comment. A pilot questionnaire was sent to all students on the WebAutism programme in January 2003. The pilot questionnaire resulted in too low a response rate (forty one percent), and feedback from our administrator and some of the students indicated that this may be due to the timing of when it was sent to the students, given that it had been sent at the same time as students received a variety of other programme-related information from the University. A revised timing for sending out the questionnaire took into account the best time to send this to the 2004 students to get the highest possible response rate. The questionnaire was

therefore sent to all students in February 2004 and achieved a sixty four and a half percent response rate, with one hundred and nineteen returns.

Methodologically there is no way of determining fully the extent to which the sample of students who responded to this questionnaire are fully representative of the student group as a whole, as I do not have data on all the aspects of the student group that are covered through the questionnaire. However, I can confirm, through analysis of admissions data, that the returns from this questionnaire are representative in terms of gender, ages, ethnicity and disability and the proportion of students working with children, with adults, or who are parents. The programme administrator holds some admissions data on students every year by collating information from application forms. This includes data about the age range of students, the settings they work in, and whether they work with children or adults, including whether the student is a parent or a practitioner. This data shows consistency with the data below in relation to gender distribution, age range, the settings students work in and their respective roles, thus indicating that the sample who returned the questionnaire were not significantly biased in any significant sense in relation to those measures. There are no other information sources collating data about prior training needs of students so there is no way of knowing whether those who did not respond differ in that variable.

3.11. Findings: student demographic data

The programme has a very high proportion of females to males. Out of the seven men who responded, none of those were a parent of a person with an

ASD, three worked with adults, three worked with children and one had an ASD himself. Over half the students are between the ages of forty and forty-nine. Only one student was under the age of twenty and there is one student over sixty. We also see from the data on length of experience that students are experienced in their field with nearly half the students reporting that they have between two and five years experience and a substantial proportion of students reporting that they have between six and nine years experience in the field (see table two).

Table 2: Gender, age and length of experience of WebAutism students

Gender	**Number**	**%**
Female	112	94 %
Male	7	6 %
Age		
Under 20	1	1 %
20-29	21	18 %
30-39	32	27 %
40-49	53	44 %
50-59	11	9 %
Over 60	1	1 %
Experience		
Less 2 years	11	9 %
Between 2 and 5 years	51	42 %
Between 6 and 9 years	35	30 %
Over 10 years	22	19 %

In terms of ethnicity, ninety eight percent of those who filled in the questionnaire are white. In terms of disability, four students answered that they had disability, one with scotopic sensitivity, two with hearing impairment and one did not give information on the type of disability although it can be deduced from question five that two people have said that they have an ASD. One of those

students added that she thinks she has an ASD herself but does not have a formal diagnosis.

The number of students and the balance of students (whether they are parents, practitioners, whether they work with adults or children) gives us a context for understanding the nature of the student group and this also has a direct bearing on how programme materials are developed and possibly also on how students respond to programme materials. As can be seen in table two below, a large proportion (sixty percent) work with children and a smaller proportion work with adults (eleven percent) whilst parents constitute nearly a third of all students (twenty seven percent). One person has a sibling with an ASD and one parent mentioned that she has two children with ASD.

Table 3: Background and settings of WebAutism students

Background	**Number**	**%**
Parent	32	27 %
Works with child	72	60 %
Works with adult	13	11 %
Has an ASD	2	2 %
Settings		
Mainstream	50	41 %
Special school	36	33 %
Home based	10	8 %
Specialist ASD	13	11 %
Further Education	1	1 %
Residential adult	7	6 %

Within this broader framework of being parents or practitioners, working with or caring for children or adults, the students work in a variety of different contexts and settings (see table two). The complexity and range of provision for

individuals with ASD is clear from the answers to these questions. A significant proportion of students indicated that they cared for or worked with someone with an ASD in one setting only. The majority work in mainstream schools although the proportion in special schools was also high. Three students also added an extra comment because their setting was not included in the provisions that were listed in the questionnaire. One worked in a short-term home, another worked in an independent hospital for adults with AS detained under the Mental Health Act and a third worked in a respite centre.

Some students also indicated that they do not simply work or care for someone in one setting but work across a range of settings. Therefore many who educate their children in mainstream schools also use some form of home-based intervention, for example. Some students work in outreach provisions or are Speech and Language Therapists (SALT) so visit a number of settings. Thus some students work with or care for someone with an ASD in a combination of mainstream provision and home-based intervention (five); pre-school and mainstream (two); pre-school, mainstream and special (two); pre-school and specialist (one); pre-school and special (one); home-based and living with family (one); home-based, mainstream, special and specialist (one); mainstream, specialist and residential (one); mainstream, specialist and Further Education (FE) (one); mainstream and specialist (one); mainstream and special (two); specialist and special (three); specialist and residential (one) and specialist and residential adult (one); working with adult in supported living/ supported employment and residential provision (one); and residential adult (one). This

gives us a sense of the range of settings and backgrounds in which students work. (All quotes from students are in italics, indented and single-spaced throughout the thesis. In the analysis that follows, since spelling and grammar variations are common and are not the focus of this study, errors that might interfere with understanding have been corrected). Samples of comments from students show the variety of different settings they work in:

> *I work in a centre that provides respite, pre school groups, after-school and youth clubs for parents of children and young people with special needs aged between two and nineteen.*
>
> *I have a nine year old who is home educated and a six year old on an ABA programme at home and a four year old who goes to pre-school but is home educated in the mornings.*
>
> *I work in two settings; the first is an NHS hospital in-patient service providing assessment and treatment for adults with learning difficulties and mental health problems. The second is a new eight-bedded in-patient service for adults with ASD, mental health and learning difficulties requiring long term nursing care due to their extreme level of ASD and mental state- all are detained under mental health act section three. Patients in both settings exhibit behaviour that severely challenges the service provision.*
>
> *I am based at a centre for people with learning disabilities in general. This centre is attended by some who have an ASD. Also I work with some adults with ASD who do not attend our centre, but live independently or with their family.*

3.12. Findings: Student aims, prior training and qualifications

Students were asked what their aims were for undertaking the programme of study and were given a list of choices. Half of the students indicated that their main aim was to further develop their knowledge and understanding (fifty percent) whilst twenty three percent felt their main aim was to be effective practitioners (see table four).

Table 4: Student aims and perceived benefits of the award

Aims	**Number**	**%**
Further qualification	10	7 %
Increase professional knowledge	10	7 %
Knowledge and understanding	56	50 %
Effective practitioner	26	23 %
Effective strategies	3	2 %
Validate practice	5	4 %
Job requirements	1	1 %
Other	8	6 %
Benefits of award		
New knowledge	23	19 %
New professional contact	2	2 %
Greater ability to support	84	71 %
Increased confidence	4	3 %
More general contact with others	1	1 %
Other	5	4 %

Students added a number of other comments that show that they have a variety of different aims and motivations for undertaking the programme. These can be subdivided into comments that focus on the possibilities of networking with others, to improve insight and understanding or to validate experience. The extracts below give an example of each of these.

> *I want the opportunity to work with colleagues and parents from other areas.*

My main wish for taking this course is to have better understanding of ASD so that we can support and care for those we work with in a more effective way.

I needed a course to help me gain insight and perspective.

It will be good, if I succeed, to validate my experience of ASD in the family to those who dismiss it at present. It will give me more confidence.

Other comments show that students wish to enhance their careers or qualifications portfolio, such as:

I would like further qualifications in order for me to further my career.

I would like to use this course as a foundation for further study, hopefully degree level in ASD or learning difficulties. All qualifications have been based upon national care standards. I wanted a qualification that was specific to ASD.

I am interested in pursuing a Masters degree and adding to this year's study.

A qualification will help to legitimise our services request for more funding for ASD specific provision, so it is actually important, but not the main reason why I chose the course, which is personal interest. I need to learn how to help my son and this course helps me to help him.

When asked whether the award itself was important to them, ninety one percent of students said that it was. Only nine percent said it was not and one of the students who responded that it was not, qualified her answer by saying: *new knowledge is more important to me than a certificate*. One other person said the award was only important *in terms of completing the course.* The majority of students hoped that the main benefit of the award would be a greater ability to support the person with an ASD. Students gave a range of reasons for why they felt that the award was important to them. These comments ranged from feeling that the certificate will validate their practice to wanting an ASD specific qualification and the increased confidence they would gain from undertaking it:

I then feel competent in my work.

I believe the certificate will give more credibility to my opinions when discussing my son with professionals (whose knowledge of ASD is often less than my own).

If successful it means I have achieved the required level set by the programme and this in itself would give me far greater confidence in the field of ASD.

It makes me feel as if I have achieved something. It is important to achieve what you study hard for and to gain more knowledge to better support those you work with.

I need broader awareness instead of isolated pockets of awareness which have been learnt experientially, for example I am reasonably ok with obsessional behaviour as this is what presents to our service but know nothing about for example PECS.

Although the programme aims to provide in-depth training for unqualified staff and parents, an analysis of the responses to the questionnaire indicate that many students do already have qualifications albeit at different levels. The programme is open entry but normally expects students to have at least two years experience in the field. We can see from the figure below that a high proportion of students have studied at Further or Higher Education level and that students have higher levels of qualifications than are necessary for entry to the programme (see table five). The type of qualification varies greatly though and is often unrelated to the field of ASD itself.

Table 5: Prior qualifications, ASD training and length of time since last study

Prior Levels		
Further Education	35	30 %
Higher Education	41	35 %
Private training	2	2 %
Vocational college	11	8 %
Other	14	12 %
N/A	13	11 %
School	3	2 %
ASD specific training		
In-service	72	65%
One-day	79	66%
3-5 days	43	36%
Conferences	59	48%
Course of study	22	18%
Other	5	0.4%
Time since last study		
Less than 1 year	36	30 %
Between 2 and 4 years	26	22 %
More than 5 years ago	22	19 %
More than 10 years ago	16	14 %
More than 20 years ago	19	15 %

Although students have prior qualifications, many of the prior qualifications are unrelated to the field of ASD. The prior qualifications undertaken by students include diplomas in management and care services, professional counselling qualifications and certificates in childhood studies. Some students have degrees

and masters degrees ranging from theology to business studies. Many students have also undertaken teacher training, nursery nurse training and National Vocational Qualifications, as well as adult education classes and diplomas run by the pre-school learning alliance. Previous qualifications and experience also include four years studying photography; the royal air force; and registered nurses.

The response to the questionnaire shows us that all students have received some ASD specific training with most students having undertaken a combination of different types of training. Twenty-two of the students have already undertaken longer-term courses in ASD. In terms of the type of training students had undertaken, many of the short training courses consisted of training in specific interventions or methods in the field. Thus several students mentioned training in specific interventions such as PECS (Bondy & Frost, 1993), Intensive Interaction (Nind & Hewitt, 1994), TEACCH (Schopler & Mesibov, 1995), social stories (Gray, 1994) and Applied Behaviour Analysis (Lovaas, 1981) just to name a few. Some students mentioned that there was some ASD content on the courses that they had studied, such as their nursery nurse or teacher training, including one student undertaking a two-year diploma in language and communication difficulties that had a substantial ASD content.

Others mentioned introductory and awareness raising courses which included, for example, ten afternoons of basic knowledge in autism; a six-hour basic knowledge course; one-day basic training; twilight sessions; a one-day autism seminar and after-school inset. Some students had completed certificates

of professional development and those courses ranged from twenty hours to twelve weeks long. A group of students had undertaken longer-term training or had a substantial component of autism content on their course. One had undertaken a fourteen-week course through the Open College network. Another had undertaken a six-month internship with Division TEACCH in North Carolina.

3.13. Discussion

We can see from the above data that the student group consists largely of mature learners. It is overwhelmingly female and educationally diverse in terms of the abilities and levels of those at intake. The demography of the student groups differs from the overall profile of undergraduate students in the wider University of Birmingham setting and also from that of students in the School of Education as a whole. Within the School, for example, most other CPD programme are designed for postgraduate students, with the exception of those undertaking BPhil study. Many of these students therefore arrive with professional qualifications and degrees and are often in professional roles such as teaching and speech and language therapy (McLinden, McCall, Hinton & Weston, 2006).

Although the above data shows that some WebAutism students are in fact teachers and other professionals with prior qualifications, the largest proportion of students work in support roles or are parents and carers who are in fact likely to belong to the groups that spend most time with the person with an ASD, especially in relation to working one-to-one with the person. These learner characteristics clearly need to be taken into account in designing a learning

environment for the students, and there also needs to be recognition of the variety of settings in which the students are placed. This is a multidisciplinary group and the students belong to three distinct groups: those caring for or working with children; those caring for or working with adults; with a further separation between practitioners and carers. Students work with and care for individuals with ASD across a variety of age ranges, in a variety of settings, with a range of abilities, and they themselves have a wide variety of roles. There has been considerable growth in recent years in a variety of different types of provision in the ASD field, ranging from full time placement in mainstream school for children to twenty-four hour provision at residential school (Jones, 2002; Morgan, 1996). The literature review highlighted that there are specific gaps in provision of training for those working in mainstream schools (Mackay and Dunlop, 2004) and for parents. The above data shows that a high proportion of WebAutism students work in mainstream schools (forty one percent) and/or are parents and carers undertaking study (twenty seven percent). This indicates the potential of the programme in filling a gap in the field.

There are also a number of other issues that arise from learner characteristics and that have been highlighted in the above literature review, including the importance of multidisciplinary work (MRC, 2001; DfES, 2002; NIASA, 2003). The diversity of the WebAutism student group might have the potential to improve students' competencies in working in a multidisciplinary way, provided the learning environment enables the development of these skills. Also, Dunlop and Mackay's (2004) report discusses the extent to which practitioners

and parents may need core training or training that is specific to settings. One question that needs to be addressed in relation to this study is therefore whether students who are placed in such a variety of backgrounds and settings have similar training needs. This includes whether there are generic training issues for all people working in the field, regardless of type of provision, the ability level of the person with an ASD or the age of the person with an ASD, and to what extent students in different settings and from different backgrounds can learn from one another, including whether students can be enabled to develop a more holistic understanding of the person with an ASD (across age ranges and settings) by drawing upon and learning from one another's experiences through their time of study. These issues are explored in chapters four and five.

Another learner characteristic relates to the varied academic background of students when they join the programme. Although the programme is open entry, we see from the above data that many already have academic qualifications when they join the programme whilst others have not studied for a long time. This signals the need to develop a learning environment that can accommodate these diverse needs. In addition, there are differences in the level of ASD knowledge students arrive with and which is in part evidenced by the amount of ASD specific training they have already undertaken when they start. The data on previous ASD training indicates that the level of ASD specific training that the students are likely to need appear minimally to be compatible with extension standards as outlined the West Midlands training framework (FREDA and Jones, 2006). This is about giving practitioners a pathway through training so they can select from the

numbers of programmes available. It recommends that training should be conceived as ‘pre-foundation’, which emphasises general disability awareness; ‘foundation, which is directed at those with little knowledge of ASD to develop awareness; ‘core level’, which is for those who already have some knowledge and training and who wish to increase knowledge and skills; and ‘extension’, which is for professionals who wish to explore rationales for their practice more intensively, to update and advance knowledge and skills through independent working and critical evaluation of own practice (FREDA and Jones, 2006).

This emphasis on exploration of rationales, updating knowledge and practice and critical evaluation of practice raises the question of whether WebAutism has the potential to enable the development of a learning community in which there is a quest for transformational understanding, including the extent to which learning on the programme might in turn transform understandings of practice and the ability to influence practice in the setting in which students work (Edwards, 1999).

3.14. Summary

This chapter undertook a literature review of the ASD macro field of practice in relation to training and good practice in the UK. By describing how government policy and professional bodies identify the underlying knowledge and skills that practitioners and carers in the field of ASD require, the chapter effectively defined the broader subject area or ‘discipline’ within which a programme such as WebAutism needs to be located. This included identification of the core knowledge, skills and competencies that need to be developed

amongst those who work with or care for individuals with ASD. The field has defined a broader set of competencies and skills that encompass knowledge about diagnostic criteria, psychological functioning, strategies, interventions and multi-agency work. Within each of the above areas, measurement of knowledge and skills needs to relate to how the practitioner uses this knowledge and skills in their practical day-to-day understanding of the individual or in their knowledge of the processes they can use to apply this knowledge through assessment of needs.

The chapter also undertook an analysis of learner characteristics of the WebAutism students as this situates the students in the wider field in the context of their workplaces and their experience. This is an important aspect of determining the training needs of these practitioners. Findings from a questionnaire showed that WebAutism students are mainly female and mature learners; they are experienced carers and practitioners in the field; they are located in a mix of children's and adults services; there are practitioners and parents and some are both; they are from a wide range of disciplines and services; they work in a combination of mainstream, special and specialist services and they are diverse in terms of prior educational experience.

CHAPTER FOUR: THE MESO LEVEL PEDAGOGY

4.1. Introduction

The last chapter outlined the ASD macro field of practice. By describing how government policy and professional bodies identify the underlying knowledge and skills that practitioners and carers in the field of ASD require, the chapter effectively defined the broader subject area or 'discipline' within which a programme such as WebAutism needs to be located. This, coupled with a needs analysis of the WebAutism students, highlighted that this training programme should deepen students' knowledge and understanding of individuals with ASD in ways that lead to improved practice. The task of this chapter is to focus on the learning processes that can enable the development of the objectives defined by the field and to start the process of evaluating the extent to which WebAutism meets these aims.

This chapter focuses on the meso level. Alexander (2000) broadly defines this level as the culture of the school, including the collective values and unique way of mediating the values of the community (Alexander, 2000). Mercer and Littleton (2007) focus on the notion of how the community as a collective entity develops knowledge and shared values (Mercer and Littleton, 2007), whilst Jones et al. (2006) focus on the analytic dimension of the meso level as the place of social practice in which broader social processes are located in small, local group activity (Jones et al., 2006). These definitions all stress that the meso level has a two-fold aspect. Firstly, it is a distinct social unit, thus Alexander

refers to the school, Mercer and Littleton refer to the community as a collective entity and Jones et al. (2006) refer to the place of social practice. Secondly, it has a distinct culture, which, according to the parameters above can encompass the unique way of mediating the values of the community, the knowledge and shared values or the locus in which broader social practices are located. All three perspectives suggest that in order to understand a culture, there needs to be recognition that culture exists within a particular context and social unit. This thesis therefore explores the above two aspects of the meso level, starting in this chapter with the pedagogy, the culture and the shared values of the community, including the way that these shape the activity of the community as a whole and moving on in the next chapter to analyse the organisational structures and systems that deliver the WebAutism programme.

The chapter starts by giving a short background to the field of learning and teaching theory and how theories are being employed in the field of computer-mediated communication (CMC) before exploring how learning and teaching theory, including psychological accounts of the learning process, have steered this research and have influenced the pedagogy and culture of the WebAutism programme which is rooted in the learning theories inspired by the socio-constructivist approaches (Bruner, 1996; Mercer & Littleton, 2007), and in the theories of activity (Engestrom, 1987) and situated cognition (Lave & Wenger, 1991). There are explicit links here to the specialist vocabulary and ways of communicating which people build up in communities enabling a focus on both the type of learning and the type of activity taking place in the community (Henri

& Pudelko, 2003). The chapter explores key principles that lie at the heart of socio-constructivist and socio-cultural perspectives and analyses the extent to which these theoretical frameworks and learning theories can enable a critical analysis of learning and teaching on WebAutism through scrutinising data from key stakeholders. This chapter examines the open-ended learning zone of the WebAutism activity system (Engestrom, 1987) whilst later chapters (seven, eight and nine) drill down to a narrower focus on micro-relations between learners (Edwards & D'Arcy, 2004).

4.2. The context

There is a growing volume of researched good practice about Higher Education teaching at generic, subject, and methodological levels (Biggs, 1994; Marton & Booth, 1997). A number of researchers are engaged in research frameworks that are about making sense of teaching. Advances in the use of technology in learning and teaching have led to much research into the pedagogy of web-based learning and how understanding of this can impact on the design of learning environments (Macalpine, 2004; Laurillard, 2002; Garrison and Anderson, 2003). Feenberg, (1989) states that electronic social environments are just as complex as the buildings serving the social activities that take place in face-to-face encounters. His standpoint is that course design needs to take account of a variety of different learning and teaching theories and to use these when constructing new learning environments. For any teacher in HE, there are thus likely to be a number of approaches that will influence an

individual teacher with a current emerging 'pedagogical consensus' being that of constructivism and socio-constructivism (Mayes, 2001; Mclinden et al., 2006).

Many people view the arrival of ICT (Information Communication Technology) on a mass scale as having a profound impact on Higher Education (Goodyear, 1998; Dearing, 1997) and some see CMC as representing the most fundamental shift in communications technology in the last 150 years (e.g. De la Sola Pool, 1984). Many argue that this growth in the use of technology provides new ways of delivering learning resources and processes and gives course designers the opportunity to re-visit many of the old models of the past (Lockwood & Gooley, 2001). This advent of technology has enabled students to learn in a wider range of settings than before and has opened up for new ways of teaching (HEFCE, 2005). It has contributed towards a growth in student-centred learning approaches which base teaching on constructivist models of learning that consider the importance of learning through and with others in the development of cognition and understanding (Oliver & McLoughlin, 2000).

Some conceptualise CMC as being separated into generations in terms of its historical development (Nipper, 1989; Garrison & Anderson, 2003). The first generation is generally considered the industrial mass produced model of printed textbook and accompanying course guide. Garrison and Anderson (2003) locate the pedagogy underlying most of these forms of delivery as being based upon behaviourist notions of accountability, observation, and the division of complex concepts into easily understandable components. Students are also expected to learn independently and not in groups. For the second generation, there are

newer technologies of mass, broadcast media and a growing acceptance of cognitive learning theory. Here there are large course teams and large upfront costs. The teacher is often not the creator of the course content. The third generation is based upon a variety of telecommunications technologies and embracing constructivist learning theories. Garrison and Anderson (2003) identify that the type, extent and integration of various types and modes of interaction is the defining component of each generation. One criticism of this perspective is that it presents the relationship between learning and technology as one which sees cognition as essentially mediated by physical tools rather than being mediated by the perspectives of others (Wegerif, 2006) and as possibly putting too much emphasis on the role of technology in shaping pedagogical approaches (Bates, 1995; Ascough, 2002).

Furthermore, there is a need to be cautious because although this notion of generations might give a sense of general trends in CMC and highlights that constructivist and socio-constructivist learning theory represent the current hegemony, this does not necessarily mean that other theoretical influences have been replaced. For example, Bloom's (1956) taxonomy of learning objectives is still drawn upon widely in education, from the notion of setting learning outcomes, through to expectations about stages of learning (Joyce, Calhoun & Hopkins, 1997). Student centred and enquiry-based approaches are becoming more widely used and many of these build on Gagne's original influence from his careful analysis of variables in learning and how to organise teaching to take these into account (Joyce, et al., 1997; Gagne, 1965). Individual lecturers using

CMC are as likely in this field as in face-to-face teaching situations to be influenced by a variety of learning and teaching theories that are based upon different epistemological approaches to the knowledge construction process itself (Laurillard, 2002).

The way in which they draw on these theories in relation to their teaching is likely to vary according to interrelationships between the subject discipline itself, the needs of the student group, the pedagogical outlook of the institution and the epistemological perspective of the individual lecturer (Joyce, et al., 1997). A behavioural approach that sees human beings as self-correcting communication systems that modify behaviour in response to how successfully tasks are managed might be very useful in programmes for reducing phobias, for replacing anxiety with relaxation, or to teach someone to drive an aeroplane or a car, for example (Joyce et al., 1997). Many teaching approaches owe a lot to the behaviourist approach in terms of the understanding of the importance of feedback to the learning process and most marking schemes in Higher Education today build on insights that have been advanced from the behaviourist teaching family (Smith & Smith, 1966). In other situations in which personal insight and confidence are important, teachers might draw heavily upon the personal family of teaching starting from the perspective of enabling learners to develop insights into themselves and their own learning, paying attention to individual perspectives and seeking to encourage productive independence so that people become increasingly self-aware, to enable people to develop as integrated, confident and competent personalities.

In practice, therefore, teachers are unlikely to focus narrowly and purely on social, behaviourist or personal learning theories in terms of how they teach. The thinking skills that teachers try to enable in students are unlikely to be united by any single psychological or learning theory (Wegerif, 2006). Teachers are more likely to focus on wanting to facilitate thinking processes that can be applied to a wide range of real-life contexts. A number of different thinking skills might be encouraged and these will depend on which skills the particular teacher considers important to develop in the students undertaking that particular programme of study. Therefore, it is possible to adopt a socio cultural perspective that emphasises the situated nature of learning with and through others, whilst simultaneously accepting that it is possible to draw upon other teaching strategies that are influenced by different teaching families. In fact, Mercer and Littleton (2007) highlight that many of these approaches to learning are not incompatible, quite the contrary, they can be complementary. Learning that involves gaining knowledge, and acquiring facts or skills and committing facts to memory can therefore be compatible with learning through discussion with other people.

The pursuit of dichotomies, such as traditional versus progressive teaching methods (Mercer & Littleton, 2007), are therefore not necessarily that useful and one can argue that there are many ways in which individuals learn and make sense of the world. Nevertheless, a very important aspect of learning, (and one that is also a large basis for this particular research), relates to the question of learning through and with other people. This is not to say that these are the only

ways in which we learn, but that these are very important meaning-making tools (Mercer & Littleton, 2007) and 'mediating artefacts.' Therefore an important focus of this research is on the role of language and interaction in mediating learning (see chapters seven, eight and nine), drawing upon constructivist and socio-constructivist approaches (Bruner, 1966; Mercer & Littleton, 2007). Given that this research on WebAutism is primarily, but not solely, focused upon researching the way that people learn through dialogue, this chapter now moves onto outlining how the socio-cultural approach to learning has impacted both on the pedagogy of WebAutism and the research approach used to evaluate it.

4.3. Socio-constructivist and socio-cultural theory

> Let me conclude with one last point. What I have said suggests that mental growth is in very considerable measure dependent upon growth from the outside in- a mastering of techniques that are embodied in the culture and that are passed on in contingent dialogue by agents of the culture…..I suspect that much of the growth starts out by our turning around on our own traces and recoding new forms, with the aid of adult tutors, what we have been doing or seeing, then going on to new modes of organisation with the new products that have been formed by these recodings…. It is this that leads me to think that the heart of the educational process consists of providing aids and dialogues for translating experience into more powerful systems of notation and ordering. And it is for this reason that I think a theory of development must be linked to a theory of knowledge and to a theory of instruction, or be doomed to triviality (Bruner, 1966, p. 21).

The above quote highlights some important cognitive and socio-constructivist learning and instructional principles, which have influenced the development of the WebAutism programme and the research undertaken here. These include a concern with how the students make sense of the world, solve

problems and take on new perspectives through active engagement, with learning viewed as activity and knowledge as an aspect of that activity (Vygotsky, 1978; Piaget, 1995; Bruner, 1966). Bruner's quote emphasises that mental organisational structures are shaped out of constructive processes with the aid of the artefacts we construct for ourselves and based on those we culturally inherit (the ways of constructing these and their typical forms and genres). It follows that part of the role of the tutor is to pass on that culture but also to provide through the organisation of the environment and its cultural artefacts rich sources of learning experience. The tutor's task then becomes to provide a conceptual bridge from the familiar everyday common sense reasoning to the scientific and conceptual world that includes the necessary vocabulary to describe these concepts and principles of practice and to embed the use of cultural artefacts in the field. This bridging can happen in a variety of ways through representations of the subject matter (Laurillard, 2002).

In recent years, many researchers have seen the need for a theory of cognitive performance that was sensitive to social and interpersonal contexts of development (Mercer and Littleton, 2007). Many of these turned to Vygotsky's work which conceptualised social interaction as being at the core of the developmental process and the construction of knowledge and understanding as inherently social (Vygotsky, 1978). Human teaching and learning is thus predicated on the belief that the possibilities of human action and development are shaped by social, cultural and historical factors (Daniels, 2004). Learning is here placed within a participatory framework and is not seen as isolated in an

individual mind (Lave & Wenger, 1991). It is located within a system that consists of context, the people, culture, language and inter-subjectivity.

Within this framework, learning is regarded as a complex process, involving both internal and socially constructed processes that are in turn mediated by affect and motivation (Macalpine, 2004; Laurillard, 2002). Learning becomes expansion of understanding and transformation of the way things are conceptualised and education is thus primarily viewed as being about acquiring new perspectives, new ways of representing ideas and interpreting experience, new ways of formulating relatively abstract problems and solving them and viewing the role of teachers as mediating the practices and values of the societies in which they are placed (Hedegaard, 2002). In the context of WebAutism, teaching then becomes a way of inducting students into knowledge that has been validated by the curriculum and the learning outcomes of the programme. Curriculum does not just consist of knowledge of a craft like kind but embodies special ways of using language to handle knowledge, which students need to be enabled to understand and to use as intellectual tools (Mercer & Littleton, 2007). This perspective stresses the importance of starting from where student are, to use what students already know and to help them go back and forth between everyday and educated ways of thinking (Laurillard, 2002). In this view dialogues are cultural artefacts because they embody participants' practical knowledge about how to talk in a particular kind of situation.

Learners are perceived as being active in constructing their own meaning and understanding and supporting each other in building knowledge (Bereiter,

2002). Processes of interaction between the individual and others (the inter-mental) become the basis for processes that subsequently go on within the individual (the intra-mental), including reflection and logical reasoning (Vygotsky, 1978). In this process, Vygotsky distinguished between lower-level mental processes (elementary perception and attention) and higher-level mental processes (verbal thought, logical memory, selective attention and reasoning). He perceived the latter as being mediated through cultural symbols and tools, and that language is critical to this as it enables mediation between environmental stimuli and the individuals' response, thus transforming lower level activity by lifting it to a higher plane through the application of tools. This account of learning and development thus sees both as mediated processes (Lave & Wenger, 1991; Vygotsky, 1978; Cole & Wertsch, 1996). Vygotsky's concept of 'mediated learning' states that certain types of thinking are very dependent on the proficient use of written and oral language that individuals can only learn by being exposed to the use of such language by more capable others.

Bakhtin challenged this notion by viewing mediation as 'dialogism', where language is seen as serving the function of co-ordinating actors and socialising (Bakhtin, 1984). Processes of interaction are seen as central to learning and as mediated through the exchange of multiple perspectives and interpretations of meaning among those participating (Bakhtin, 1981; Hung & Wong, 2000). The dialogic perspective sees cognition as being mediated by the perspective of others rather than as a result of internalisation of language (Tomasello, 2005). Dialogue itself becomes the primary thinking skill from which others are derived

(Wegerif, 2006). Through dialogic learning, students can explore current understandings, build on what they already know and gain a range of different perspectives. These two views of mediation are not incompatible but need to be distinguished (Wegerif, 2006). Wertsch combines Vygotskys' account of cognition as mediated by tools (such as language and other representations), with Bakhtin's account of thinking as mediated by 'social voices' (Wertsch, 1985; 1998). In terms of the learning process, this account takes the view that in order to encourage independent thinking and reasoning, it is essential to engage students in interactive tasks that involve the students in active experimentation and reflective discussion.

The above account of learning and development as mediated by language and socialisation should provide insight into how students can be enabled to travel on intellectual journeys so they understand and are understood in wider communities of discourse (Mercer & Littleton, 2007). Wenger's social learning theory proposes that participation in community life provides the basis for learning and identity construction (Wenger, 1998). This perspective emphasises that learning is a social process and human beings are intrinsically social. People participate in different social experiences in various communities throughout their lives and this participation in communities leads to learning because it contributes to the construction of identity. Wenger sees negotiation of meaning at the base of learning, and that this happens through participation and reification, two complementary processes that are in constant interaction (Wenger, 1998). The former captures the social experience of living in the world and active

participation in community and the latter gives form to experience by producing objects that congeal this experience into 'thingness' (Wenger, 1998, p. 58). The activity of a community develops according to goals it sets itself and the strategies the community adopts to reach them. It follows from this that learning communities undertake various activities that promote various types of learning.

Wenger's social learning theory can be used to analyse the types of activity taking place in the wider WebAutism community, thus recognising that virtual communities can play a socialisation role to the same extent as 'real' communities do (Henri & Pudelko, 2003). The goals of WebAutism can be broadly perceived as knowledge construction and shared practice, and specifically as the pursuit of a qualification, the University Certificate (ASD). The interest here lies with using socio-cultural and activity theory as an intellectual toolkit to enable understanding of how students engage in learning activities by acting on the object of activity (the goals outlined above) and transforming it, thus seeing it differently (Edwards & D'Arcy, 2004). Henri and Pudelko's work is important here as it examines the processes of learning by analysing the activities that take place within a community and simultaneously recognising that these particular activities define the community itself. Thus they distinguish between the activities of a learners' community and the activities of a community of practice. In the former, the activity of the community is characterised by learning and knowledge construction, which is activity that is guided by the teacher or instructor and is linked to the objectives of the studies programme,

having been conceived according to the level of development of the learners (Henri & Pudelko, 2003).

In order to analyse the activity that takes place within a community such as WebAutism, Laurillard (2002) emphasises the dialectical character of the teaching and learning situation itself and stresses that this includes the need to look at associations between the content and the context of the learning process (Laurillard, 2002). This does not mean we can necessarily establish reliable connections between learning, context and content that would allow us to define reliable prescriptions for teaching strategies but we can aim to take all those into account in our attempts to understand learning processes. Laurillard (2002) describes this as forming a bridge between what we know about student learning and what we should therefore do as teachers and urges us to base teaching strategies on understanding of learning whilst recognising that the relationship can be complex and unclear.

In Laurillard's model, understanding of learning is about a dialogic model of learning and teaching, in which we find ways to interrogate how students learn in order for that to then impact on our teaching. The next part of this chapter examines learning processes on WebAutism and identifies how insights about these have the potential to enable further development and refinement of the teaching approach. This is undertaken by exploring the type of activity that takes place within the WebAutism learning zone and starts by describing the goals of the community (these relate to how the field defines the needs of practitioners and carers, as outlined in the last chapter) and the types of learning processes

that might be needed to meet these goals. Once these goals have been defined, I then describe the teaching methods and their content in order to discuss some of the strengths and weaknesses of these methods in terms of their ability to meet the goals.

4.4. The goals of the WebAutism community

Although there are an increasing number of programmes in Higher Education, focusing on work based learning (Stacey, Smith & Barty, 2004; Reeves & Forde, 2004) and CPD, we saw in the last chapter that demographic information about the WebAutism student group highlighted a non-traditional group of students that differs in many respects from the profile of other student groups. The learning context of WebAutism thus needs to be different from many academic programmes in Higher Education given that students are undertaking a vocational programme in which the aim is to influence and change practice. The broad aims of the WebAutism programme are to develop the students' understanding of the care, support and education of children and adults with ASD; to enable students to engage with lifelong learning, study and enquiry and to appreciate the value of education and training to society including enhancing the practice of students to apply skills in the care, support and lifelong education of individuals with ASD in a wide range of contexts. This is very different from Laurillard's conception of academic knowledge as having a second order character in which the focus is to enable students to abstract and represent concepts formally, to generalise and to learn to handle representation systems

(Laurillard, 2002). The above aims encompass much more than the development of analytical skills.

The aims of the WebAutism programme suggest that a definition of academic learning needs to be broadened in this context to include a number of different skills that go beyond the analytic dimensions of academic learning. The philosophical basis for WebAutism is built upon a perspective which views understanding as the key to effective practice and recognition that ASD is a transactional disorder that requires mutual change and adaptation on behalf of the person with an ASD and those who live or work with that person (Jordan & Guldberg, 2002). In order to meet this aim, students need to develop a knowledge base about the psychological functioning of individuals with ASD as well as how to intervene to enable learning and to support the individual to function (Jordan & Jones, 1999). Learning outcomes indicate that this subject knowledge includes knowledge about the disorder and how it impacts differentially on individuals; how to support and enable learning for the individual with an ASD and contextual knowledge about legislation and provision in the field. Thus subject specific knowledge needs to be combined with an ability to apply knowledge and skills to practice, including aspects that relate to the personal family of learning and teaching models, such as the ability to understand more fully the thoughts and feelings of another, the capacity to empathise and to strengthen appreciation of the variety of human experience, all skills that are considered crucial in ASD practice (Peeters & Jordan, 1999).

Chapter three saw that students arrive on the programme already sharing common ground, based upon the fact that they all care for or work with someone with an ASD. Their common ground relates to their experiences as carers and practitioners in the field despite the fact that these experiences may differ widely from individual to individual. Given the varied life and work experience of WebAutism students, it follows that the everyday experiential knowledge of students as carers and practitioners in the field can provide a starting point for their learning (Dewey, 1916), taking into account that 'growth starts out by our turning around on our own traces' as the quote from Bruner highlights (Bruner, 1966). Kolb (1984) progressed ideas from other models of experiential learning and put forward the notion that ideas are not fixed or unchangeable elements of thought but are formed and re-formed through experience. This continuous process is often represented as cyclical and implies that we all bring to our learning experiences our own ideas and beliefs about learning. Kolb's learning cycle thus illustrates that the learning process is about reflecting, processing, thinking and understanding (Kolb, 1984; Fry et al., 2004).

In Schon's (1987) notion of reflective practice he highlights that practitioners need to become more adept at observing and learning through reflection on the artistry of their own profession and he argued that reflection on practice is central to development of professions because recognised experts in the field exhibit distinct artistry that can be learnt through observation of competent practitioners. If WebAutism students are to appreciate deeply and to understand critically, to draw connections between knowledge and insight about individuals with ASD

and to apply these insights into practical work with the individual with an ASD, then they need to engage with the subject in a way that is driven by the intention to understand and seek meaning, to relate concepts to existing experience, to distinguish between new ideas and existing knowledge, including critically evaluating key themes and concepts (Marton & Booth, 1997).

In order to enable students to develop a combination of knowledge generation, active, experiential and reflective learning, the programme uses a specific instructional design which needs to be described before we can move on to analysing and evaluating the type of activity this gives rise to within the community. The instructional design of the programme uses a number of different teaching methods through a blended e-learning programme, the wide definition of blended e-learning being that it uses a combination of technological tools in conjunction with face-to-face teaching. Teaching methods range from using an adapted version of the traditional lecture to innovative group work using technological tools to enable communication amongst students. The online environment is largely delivered through the WebCT Virtual Learning Environment (VLE) and consists of online sections, audio-visual material on CD ROM, synchronous and asynchronous online discussion. The different components of WebAutism are closely integrated with one another and online discussions are built into the structure of the programme and are based upon the issues students have covered in study material.

The online presentations are conceptualised by the programme team as representing an online version of a lecture. They are delivered to students within

the WebCT VLE and present facts and key information about the subject area, such as current understandings of causation, diagnostic criteria and the current legislative context in the field of ASD. The presentations also provide students with information about different interventions in the field and summarise current research into psychological functioning. These presentations are akin to a power point presentation and borrow from the behaviourist teaching family (Smith & Smith, 1966) in that they try to break down aspects of the subject matter into manageable chunks focusing on key points, with the view that students can complement those constructions by wider reading. They are written specifically for presentation on the web and for students to access online so consist of key points presented on presentation templates.

They also borrow from Bloom's taxonomy (1984) in terms of a clear focus on outlining the learning outcomes for each section. The aims of these online presentations are to organise and structure student learning and to give students a framework within which to fit facts and ideas. The lecture method is still used extensively in Higher Education and its value is primarily seen as necessary for providing background information and ideas, organising subject content and introducing basic concepts and methods (Fry et al., 1999). The concept of the online sections on the WebAutism programme were developed in order to provide new information based on original research and not found in textbooks, to highlight similarities and differences between concepts, and to organise the subject matter.

Secondly, it was thought that using an adapted lecture format would assist students to make the transition to 'online'. Continuing the familiar educational approach of communication of theory (lectures) followed by other modes of delivery could potentially provide a linkage between the known lecture setting and the unknown environment of online learning. As these students are largely unqualified students entering Higher Education without prior qualifications, and as they are unfamiliar with web based study, it can be argued that they need a structure and a framework in which to locate their understandings. There is therefore value in students having shared material that they access and that provides a shared platform of understanding. These online presentations are complemented by materials on the CD ROM that consist of video clips from a number of different provisions, ranging from schools to adult services and interviews with parents, practitioners, academics and people with ASD themselves. The aim of these are to disseminate 'good practice', to give students opportunities to reflect on the perspectives of different stakeholders in the field and through this be enabled to stand back from their own practice to reflect on the practice of others.

In order to undertake critical analysis of these teaching methods in terms of constructivist and socio-constructivist principles, we need to start by evaluating the extent to which this instructional design has the potential to enable the kind of learning in which 'much of the growth starts out by our turning around on our own traces and recoding new forms, with the aid of adult tutors' (Bruner, 1996). Mercer emphasises the need for teachers to respond to what students say and

vice versa and that it is through this response process that students and teachers begin to appropriate the others' knowledge (Mercer, 1994). In relation to the above WebAutism instructional design, these online presentations can on the one hand be important records of constructivist activity and are tools or artefacts that can mediate learning. They can enable the tutor to model expert reasoning and current thinking and given that these online presentations have been located within a dynamic content management system which enables tutors to change programme materials on a regular basis, this could be viewed as potentially more valuable than the textbook because there is more finesse as these materials were designed for this group of students and this particular cohort.

On the other hand, there are limitations to the extent to which this method of delivery can enable appropriation of knowledge in the way Mercer suggests. Firstly, the lecture method (of which the above is an adaptation) has been seen as a poor way of enabling a large proportion of the population to understand difficult and complex ideas as lectures depend on the lecturer knowing the capabilities of students very well and students having similar capabilities and prior knowledge (Laurillard, 2002). More open access and modular courses make it less likely that a class of students will be similar in background and experience to make lectures workable as a principle teaching method. We saw in chapter three that although WebAutism students are unified by the fact that they all care for or work with someone with an ASD, they enter the programme being situated in diverse backgrounds and it is important to investigate the extent to which this causes tensions.

Secondly, in the context of WebAutism, this form of delivery has the added complexity that these 'lectures' exist on screen and the relatively static nature of these materials means they can not be immediately adapted through students posing questions to a tutor and asking him or her to explain further or by the lecturer questioning students to check the levels of their understandings. The programme team have tried to overcome these limitations in two ways. Firstly, by adopting an action research model to the student consultative process and secondly by integrating online synchronous discussions with programme materials. In terms of the first, programme materials are changed on a yearly basis as a result of feedback from students through module evaluations. The team have adopted an action research cycle to their teaching in order to continuously change and improve the learning environment through collaboration with students (Stenhouse, 1975; Lacey, 1996), thus aiming to provide a framework for a rigorous, systematic and thoughtful pursuit of the improvement process itself (Schon, 1987; Carter, 1998). Secondly, the team have built online discussion opportunities into the programme itself and these are a key way in which the programme enables interaction. These are described below.

4.5. Dialogic teaching

In terms of facilitating the development of a learning community, WebAutism tutors developed structured online discussion tasks based around set readings and problems from programme materials to encourage students to engage with each other in a limited time-frame (there is more detailed explanation of this in chapter six). These are asynchronous online discussions known as Time-to-talk.

It was hoped that these Time-to-talk discussions would enable students to bring their experience into their learning and enable a learning community to develop. Programme tutors felt that both online and face-to-face discussions had the potential to enable students to discuss programme material and to learn from one another's perspectives, that these discussions could enable students to draw on their experiences and to try to apply their developing understandings to their practice and thus potentially transform their practice.

The programme team recognised that practitioners usually arrive with a strong need to talk about their experiences and their practice and, given the open entry nature of the programme, that they might need to be supported in order to be able to move from this every day way of thinking to 'academic' ways of thinking (Laurillard, 2002). Time-to-talks in the first module therefore gave students the opportunity to talk about their experiences and opinions on subjects that the programme tutor knew they would have be able to comment upon from the perspective of their experiences. These were also questions that the students were likely to have the confidence to engage with. A little more would be expected in the second module when they would be asked to debate an issue from one point of view. In the third module, there was the expectation that they should be able to see things in a balanced way and from different perspectives. This strategy was also mirrored in the assessment process and both were considered as a means of supporting students in their learning process.

In this process, the tutor's role is one that involves many elements. WebAutism tutors have a wider pastoral role supporting students with study skills

and discussing course material through face-to-face tutorials, including formulation of the task, topic and ground-rules of the discussions. The tutors also have very specific roles within the online discussions themselves. Interventions within the discussion include opening the discussion, meeting and greeting participants and creating 'space' within the task for students to get to know one another. Additional key tutor roles include keeping students 'on track', helping students overcome obstacles and summarising discussion in ways that model expert values and/or cognitive and meta-cognitive reasoning (Henri 1991; Preece 2000). Through discussions tutors can assess the knowledge levels of students, thus understand individual students' knowledge levels and perspectives.

In fact, the WebAutism facilitation model focuses strongly on enabling peer-to-peer learning. In order to maximise student participation, the tutor monitors discussion but takes a background role unless a real need to intervene is perceived (such as very low participation, a serious misunderstanding of the task or transgression of the ground rules for discussion). Students are therefore given the opportunity to discuss issues amongst themselves, to support one another and to share perspectives. However at the end of the discussion period the tutor summarises the discussion. In this summary, the tutor is expected to offer feedback or model expert thinking and to signal to students that it is now time to move on to the next discussion. This facilitation model takes account of socio-cultural perspectives that focus on how students' thinking can be moved on through engaging with experts or more capable others, whether these are tutors or peers. These issues are explored in detail in both chapters eight and nine.

For this chapter, analysis focuses on the wider WebAutism learning zone and the activity that takes place through that, thus setting a context for later analysis of micro-relations, which takes place through analysis of online asynchronous discussions. One of the key questions that arise for this and subsequent stages of the research is whether the WebAutism blended learning environment can nurture human growth in the way that Bruner's quote at the start of this chapter suggests and in a way that can be beneficial for practitioners and carers in the type of caring setting that the WebAutism students are based. Chapter three highlighted that training in the field of ASD needs to enable new insights and understandings as well as improving competencies and changing practice. An analysis of learning processes on WebAutism will therefore take place within the framework of these two themes in order to give an overview of the extent to which the learning zone succeeds in meetings its aims. A number of different data sources have been consulted in order to explore those two aspects. These include module evaluations, external examiner reports and samples of assessed work. As we have already identified, the subject specific understandings identified for the field are twofold; practitioners need to develop insights and understandings into ASD and they need to develop improved competencies that enable them to support the person with an ASD.

4.6. The student voice

Before exploring the themes of new insights and understanding and improved competencies, it is worth starting with a quick resume of students' feedback about the learning environment itself, highlighting key points arising

from module evaluations that have taken place over the course of the year. This gives a framework for understanding student satisfaction levels with the environment, giving a context for more robust exploration of key areas that may require further attention and which might curtail the development of the community. Module evaluations signal that students express high satisfaction rates across the three modules in terms of rating learning materials as either fair or easy to understand (see table six). The module evaluations had different response rates, as can be seen by the table below).

Table 6: Satisfaction rates with learning materials and associated reading

Programme Sections	**Module 1 & 4 Number**	**Module 1 & 4 %**	**Module 2 & 5 Number**	**Module 2 & 5 %**	**Module 3 & 6 Number**	**Module 3 & 6 %**
Fair or easy to understand	52	75%	68	79.5%	46	73.9%

In terms of analysis of qualitative data from module evaluations, one student commented that *the balance of online presentations, reading and discussion is perfect and the constant interaction with other students is really useful.* Further qualitative comments show that many students express satisfaction with programme content. Some examples of these comments are shown below and they are grouped into four different types of comment, including new learning, relevance, community building and teaching methods:

> *It is excellent!! Reinforces my daily working life as well as challenging my present 'mind set; it has given me a greater understanding of what my child with autism is experiencing and enabled me to question what is being done with him; it gives me a*

much broader view of ASD than I had experience of within my family and from previous reading; The content for each module is appropriate to the subject matter.

Yes it makes sense and I am finding the references to other reading material very useful; I think it is well presented and I can relate it to my clients, which makes it real to me; I've fired my colleagues with enthusiasm/bored them about (the course) – you may get more applications from my profession; Fantastic course - a real challenge personally, but as the content is so exciting I am inspired to work hard.

I like networking with others; it is good to be sharing knowledge with colleagues/friends; I have found talking to the whole range of students invaluable. I really value other people's professional standpoints. The most important issue for me is working with parents.

I like reflection on practice, and elements that provoke reflection. I am finding the material excellent, interesting and very informative. Time-to-talk and other people's contributions are really good. It's great to benefit from other people's knowledge. The CD ROM video materials are my favourite. The online unit materials help me to understand key points and I can make more sense of the module reader after I have gone through an online presentation.

Students also comment on the value of the content or subject matter itself, such as learning about a particular aspect of the difficulties a person with an ASD is likely to have. Examples include:

The social skills of people with ASD; the sensory difficulties of people with ASD; psychological functioning; listening to and reading the "experts" like Ros Blackburn and Wendy Lawson; looking at actual needs, rather than quick fixes; *improving my understanding of the condition of ASD.*

The external examiner's feedback, highlights the diversity of the materials:

Given the wide-ranging professional backgrounds of the students, some of whom are not working within the field of education, the course team have considered ways to ensure that this diversity of needs continues to be met within the course programme. In

particular, the range of resources and course materials is rich and diverse, reflecting the different contexts within which students are reflecting upon and developing their professional practice.

However, a strong theme also emerges from student feedback, which highlights a divergence between different stakeholders in the community in terms of their perceptions of programme material. A small minority of students raise concerns, which may need to be addressed further. Here we find that different subsets of the community arrive with different expectations and do not necessarily all feel that their expectations are realised equally. So in analysing module evaluations, people working with children in schools give positive feedback about the programme. Feedback from parents and from people working with adults, on the other hand, suggest that there are some levels of dissatisfaction that the materials are too child-centred and possibly also too orientated to the school situation. Some people working with adults report a sense of frustration that there is too high an emphasis on children and schools:

I found too much emphasis on children with autism – not enough on how many people are damaged by mental ill-health and learning disability well as a high level of autism.

I found it a bit unrealistic for those on the course with autistic children – I feel they will be left with too high expectations of their children.

I found the emphasis on children and schools frustrating when I work with adults.

There is not enough reference to adults.

One person with an ASD himself who is also very active in the disability rights movement has highlighted that

Our group was somewhat overlooked in the overall planning. I think what is needed for the future is to construct an entirely new course focussing on the social construction of autism as that would have a lot more relevance in the political arena of defining how services should be provided.

The feedback from the above students will be important to address given that they represent a subsection of the community who are in a minority, as seen in chapter three. The programme tries to enable students to develop a holistic understanding of the person with an ASD. Therefore, if programme materials are too unbalanced in terms of focusing on children in the school situation, the above student groups (parents and those working with adults) may not find that the programme materials give them adequate tools to evaluate and change their practice. In addition, students who work with children may not be stretched enough to challenge their own outlook and to try to perceive the person with an ASD outside of the school setting. We can see from the team's reports to students and through the annual programme audit, that the team agree that they need to work further on balancing the materials as they have identified the importance of addressing the above student feedback through incorporating material developed on abuse and risk assessment/manual handling for module six. Further material on adults is ongoing and has been incorporated into the third module. The above highlights some unifying factors in terms of improved competencies but tensions emerge in relation to different boundary communities that exist within the programme and show that the needs of different subsections of the community need to be carefully addressed. Given that parents and people working with adults are a minority on the programme these tensions become

important to resolve in terms of ensuring that different subsections of the community have equal chances to improve their competencies but also so that the community can work together round shared values and repertoires.

4.7. New insights and understandings

Chapter three highlighted that in order to achieve a diagnosis of ASD, a person needs to have significant developmental delay in three areas of impairment, commonly described as the triad of impairments (Wing, 1996). Several reports highlighted that anyone undertaking training in ASD needed, at the very least, to have an understanding of the triad of impairments and how that can impact on individuals with ASD (e.g. Mackay & Dunlop, 2004; FREDA & Jones, 2006). In WebAutism, one of the ways of assessing the extent to which students are developing new insights and understandings can be attempted through analysis of a selection of assessed work, as described in chapter two. The assessment process on WebAutism is based upon the submission of a portfolio after each module. A portfolio is generally regarded to be a collection of work that includes a reflective commentary. Klenowski, Askew and Carnell, (2006) highlight that one of the crucial processes of any portfolio is reflection but also the need to develop new insights and understandings and from there to bring about change.

The key purpose of the portfolio is to enable students to connect theory to practice and to have a record of learning so that progress can be assessed over time. The portfolio is practice-oriented and based upon professional learning (Brown, 2003). The key is that there is a shift of emphasis from the collection of

evidence to the analysis and integration of learning. All students on WebAutism answer the same questions for their portfolio and they are required to submit a portfolio that is divided into three components. The first component is an essay related to study material, the second component is a case study in which they are asked to reflect upon and evaluate their practice and care and the third component is a synopsis. The synopsis is tied in with the online bulletin board discussions described above (Time-to-talk). Students are asked to select one Time-to-talk from each Unit and write a summary of what they learnt from that discussion. This summary should be reflective and show that students are learning from the perspectives of others. This means that the notion of learning with and through others is tied in with assessment in an indirect way. One of the main aims of the portfolio is to enable students to make links between theory, or programme material, and practice.

A sample of nine portfolios across all grade boundaries were chosen for analysis in order to gain a deeper understanding of student learning processes. Having examined and coded the students' comments across the nine portfolios, there were three key ways in which students show evidence of theory influencing practice. Firstly, they articulate general notions of how their understanding has led to practical consequences. This includes statements that highlight how their general understanding of people with ASD has changed during their time on the programme. Secondly, they talk about specific developed strategies (such as TEACCH and PECS) that they have tried in their 'practice' in the school, classroom or residential provision. Thirdly, students mention specific strategies

that they have developed themselves and that they describe in their portfolios. These are strategies that come have become accepted as ‘good practice’ in the field and are adapted from wider strategies such as TEACCH (Schopler & Mesibov, 1995). Finally, students also mention how their learning on the programme has influenced general aspects of their practice.

Further analysis examines the extent to which there is integration between theory and practice and this becomes more problematic. In the first module of the WebAutism programme, students are given an introduction to what it means to have an ASD. Students are also encouraged to develop an understanding that goes beyond a focus on the behaviours of individuals (Jordan & Jones, 1999). The iceberg analogy is often used in the field to make the point that the manifest behaviours of individuals with ASD are only the tip of the iceberg (Shopler & Mesibov, 1995). In order to fully understand the individual, there needs to be understanding of underlying psychological functioning which gives rise to behaviours, including cognitive and inter-subjectivity difficulties that underlie this behaviour. On undertaking analysis of portfolios, the nine students all refer to and attempt to explain the triad of impairments. In addition, they all refer to one aspect of psychological functioning in their work, although different students focus on different aspects.

Although students at this level are not expected to fully understand or be able to articulate the theories that are put forward to explain the complex difficulties that people with ASD face, such as theory of mind (Baron-Cohen, 1995), executive functioning (Ozonoff et al., 1991), central coherence (Happe &

Frith, 2006) or inter-subjectivity (Hobson & Lee, 1999; Jordan, 1999), the students are nevertheless expected to show some awareness of these theories and to consider how they might affect a person with an ASD. Four of the students give a basic description of theory of mind in their portfolios whereas three explain executive functioning and two discuss central coherence. However, there is little attempt to link that understanding with the specific behavioural manifestations this individual displays in terms of observed behaviour. In fact, there is a mismatch or a gap between the way that students write about understanding of the psychological functioning of the individual with an ASD and the observed behaviours of the individual, which the student outlines in the portfolio. There is little evidence of integrating this day-to-day understanding of the individual's difficulties with theories in the field. This could potentially lead to a one-sided and piecemeal understanding because the students do not link those behavioural manifestations of the disorder with underlying understanding of impairments in cognition and inter-subjectivity.

I select two examples to explain this point in more detail. Firstly, Lily spends time in her essay describing theory of mind and shows a good understanding of this. However, in her case study, she describes Mark, the person with an ASD whom she works with, but makes no attempt to describe his difficulties in terms of underlying psychological functioning, or to relate those to the theory of mind hypothesis. Rather, she starts with an observed aspect of Mark's difficulties which Lily thinks needs to be changed. She focuses on describing his literal understanding. Then, when she talks about the interventions she is using, she

describes how she has adapted the environment to become more structured and predictable to Mark by introducing pictorial timetables and schedules. Her discussion of theory of mind remains at the 'theoretical' level and as something she has learnt about through programme materials, but she does not relate this difficulty to Mark from the point of view of how this difficulty with theory of mind might impact on him, or, following on from that, the practical ways in which he can be supported to manage this difficulty, through using the strategy of social stories for example. Rather, her learning about psychological functioning is separated from her practical work and her observation of the person with an ASD is separate for the interventions she has put in.

The second example that illustrates this point is Amber's portfolio. In addition to the triad of impairments, Amber talks about executive functioning. However, her case study again starts from the observed behaviours of Jacob, the individual with an ASD whom she works with, leading to Amber focusing on Jacob's sensory difficulties. In her portfolio there are some links between the underlying executive functioning difficulties she has identified and the programme she has put in place, which is trying to teach Jacob to generalise his learning of specific skills across different contexts, but there is little integration between the three aspects.

This could, in part, be related to the way that the portfolio is structured and the way that the portfolio questions are set and identifies a change that could be implemented on the programme. Given that I proposed the format of the portfolio, I am aware that my reasoning for dividing the portfolio into the essay, case study

and synopsis, was because I was concerned that students at this level would need to gradually be supported to be able to synthesise theory and practice in the way that would be expected of a student studying a postgraduate qualification. Nevertheless, the above examples highlight that the programme team could strengthen the students ‘ learning processes to align them more with the aims (using learning on the programme to influence and change practice) of the programme by examining programme materials critically and by rephrasing portfolio questions. This would ensure that they encourage further integration between the essay and case study and pose questions in a way that enables students to follow through a link between underlying difficulties, the behavioural manifestations and the interventions, thus supporting students towards being able to integrate those three aspects. For example, students could be encouraged to start by describing a particular underlying difficulty with psychological functioning, then specifically be asked to explore how this translated into behavioural manifestations, then logically follow through to proposing how to intervene to support the person.

A brief example of where this was undertaken quite successfully is in Sue’s portfolio, in which she describes David, a secondary school pupil, and his difficulties with executive functioning. She describes how this leads to a difficulty in organising himself. Sue has supported him by teaching him to use a diary in which all organisational aspects are written down and by working with a peer who acts as a buddy to specifically help him with organisational matters. She has therefore integrated her understanding with his underlying difficulties and

theoretical knowledge from the field, with identification of which aspect of his functioning to focus on and drawing upon practical strategies that can enable him to function in the environment of school.

This focus on how to enable better integration can be addressed in terms of how the programme materials are presented but also probably in terms of how the portfolio questions are asked. It could mean that the structure of the portfolio itself needs to be critically examined. The main aim should be to find new ways of encouraging student learning that enable closer integration between theory and practice. Jordan (personal communication) has identified this as a crucial issue to address in training programmes generally. The ASD field is populated with many different interventions that are marketed widely and often presented as giving all the answers to the difficulties of a person with an ASD. Yet research is increasingly finding that different areas of psychological functioning are likely to affect individuals differently (Happe & Frith, 2006) and this shows the necessity of starting with understanding the individual and employing strategies that build on the understanding of that individual rather than to adopt specific approaches or tools without fully justifying why those are being used. Otherwise, there is a danger of practitioners just learning the tools of the trade in a very formal way, focusing on the outer appearance of the tools rather than understanding why these tools might be useful to employ.

To illustrate this point, one of the components of the TEACCH programme is its focus on using visual schedules for the person with an ASD. The underlying theoretical assumption behind the importance of these relate to the fact that

many people with ASD have a visual learning style and the importance of structuring the learning environment to enable understanding (Schopler & Mesibov, 1995). However, it is clear that many practitioners take on board these tools without understanding why they are being used or ensuring that the tools are used in a way that enable better functioning for the individual with an ASD. Therefore it is not uncommon to find classrooms in which these tools exist, but are not used in a meaningful way so they hang on the wall rather than being used by the person with an ASD.

4.8. Improved competencies and changing practice

Nevertheless, students do report that their practice has changed and that they have gained improved competencies. The majority of qualitative feedback focuses on aspects related to the practice based nature of the programme and on ways in which it has enabled their practice such as '*working in a team', 'using observation and assessment in their work setting'*. Firstly, we see in statistical terms that students report high satisfaction levels with the extent to which the programme is useful to them in their work setting (see table seven).

Table 7: Student comments on relevance to work.

	Module 1 & 4 N= 52	**Module 2 & 5 N= 68**	**Module 3 & 6 N= 46**
No answer	9.6%	10.3%	0%
Highly relevant	59.6%	32.3%	28.3%
Relevant	15.4%	32.3%	36.9%

Fairly relevant	11.5%	14.7%	17.4%
Mostly irrelevant	3.8%	3%	6.6%

A tutor also reports that students have been able to grow in confidence stating: *I have heard of several examples of them being able to make a difference in the practices of their workplace*. Outcome data based upon a questionnaire to a sample of thirty-seven students who completed the programme also reveals that students re-use materials, thus indicating that materials must have some relevance to practice. The majority of respondents had run informal training sessions themselves and some had used the materials to run formal training. Respondents also indicated that they had used the materials for discussion on ASD, awareness raising, support and mentoring, training overseas and personal development for National Vocational Qualifications (NVQs). Out of thirty-seven respondents, thirty-six reported that they had undertaken further dissemination of what they had learnt, sixteen had moved on to undertaking further training and thirty-six had recommended the programme to others. Much of their dissemination of programme materials related to providing formal (five) and informal training for others (twenty-five), passing on reading material (twenty) and sharing CD ROM material (five). Qualitative feedback highlights that the practice based competencies divide into comments that highlight general application to practice; comments in which students refer in general terms to the skills that they have developed and finally comments that highlight specific skills that they have developed:

I wish I had the access to it when my 15 year-old Aspergers son was diagnosed 8 years ago.

I feel my knowledge on ASD has improved 100%… I have helped a student who would not come to school, now comes in and does not want to go home.

It has given me background, theories and models that have informed my own practice and it is very much in keeping with my job.

I have changed the way that I use observation and assessment in the work setting.

My studies have improved my ability to working in a team.

The most important issues for me have been thinking about and changing my practice.

My studies have helped me to create a more functional environment for the person with an ASD with realistic expectations.

I now know much more about interventions and approaches in the field including techniques and strategies.

Using observation for assessment and additional information, including using video for the first time.

Assessment of the needs of the person with ASD and evaluation of my own practice.

4.9. Discussion

The above analysis has explored the way in which socio-cultural theory through its approach to the knowledge construction process, locates learning in the social context in which it takes place, and highlights some key questions to be explored that can enable us to get to the heart of the learning process in a specific context such as the WebAutism learning zone. Bruner's quote at the start of the chapter highlighted some key socio-constructivist principles and these were used as a basis for exploring student learning in this specific context. This included identification of the learning processes (such as experiential and reflective learning) and the subject matter that students need to engage with, as

identified by a literature review related to training needs of the wider field of practice. Furthermore, the theoretical framework identifies some key areas to explore in relation to analysis of these learning processes. The first of these points to Bruner's quote that

> 'mental growth is in very considerable measure dependent upon growth from the outside in- a mastering of techniques that are embodied in the culture and that are passed on in contingent dialogue by agents of the culture' (Bruner, 1966, p. 21).

This contextually based understanding of learning recognises that techniques embodied in a culture will change according to the social context of that particular culture and will also therefore be passed on in different ways by agents of that culture. Understanding the context and the culture in which learning takes place thus becomes a pre-condition for understanding learning (Alexander, 2000) and there have been attempts in this chapter to start description of the WebAutism learning environment in terms of the values and perspectives that are embedded in it and how these impact on student learning processes.

The second aspect of Bruner's quote guides our analysis of the learning process towards the role of the tutor in this process. Bruner states that 'much of the growth starts out by our turning around on our own traces and recoding new forms, with the aid of adult tutors, what we have been doing or seeing, then going on to new modes of organisation with the new products that have been formed by these recodings.' In this chapter, we have focused on the role of the tutors in terms of the creation of learning resources and a learning environment, rather than the facilitation of the tutors' role through dialogue (which is explored in

chapter nine). Here the focus has been on the extent to which the learning environment meets the aim of enabling the integration of new insights and understandings with improved competencies in student learning processes. Bruner's quote also emphasises that the

'heart of the educational process consists of providing aids and dialogues for translating experience into more powerful systems of notation and ordering'.

The way in which experience is translated into more powerful systems of notation and ordering will need to be located within the specific learning environment and this chapter has touched on the way in which activity on WebAutism is characterised by the extent to which students can translate this experience into new insights and understandings and improved competencies. We see from analysis of WebAutism data that the activity of this community is indeed characterised by learning and knowledge construction.

However, the activity of this community appears to go further than knowledge construction and learning as being at the heart of the community but also has the potential to include construction and co-construction of professional identity through evolution of shared practices. Henri and Pudelko (2003) stress that a virtual community of practice develops among people in the real world who are already members of a community of practice so they practice the same trade or share the same working conditions. Even though WebAutism students work in a variety of settings and have a variety of trades in that some are teachers, some are speech and language therapists whilst others work in support roles or are parents or carers, these students nevertheless all have in common that they work with or care for someone with an ASD. A question for the micro-analysis is

therefore to explore whether students are also involved in activities that develop and enrich their professional practice by sharing and pooling complementary knowledge, sharing common interests, and partaking in the same knowledge system including focusing their problems on their day to day work (see chapter seven).

Thus the key question to continue to explore needs to be driven by examining what makes learning productive. Learning and teaching theory should have within it the possibility of identifying change and highlighting how to make education more effective. This involves not only a dialogic approach to the learning process itself but necessitates an approach to learning in which our understanding of how students learn informs not only the teaching but how that teaching can be improved (Laurillard, 2002). One student articulates how the aims of the programme were realised in her own development and learning through a letter she sent to the programme team after qualifying. It is worth quoting an extract from this as it encompasses many of the points in Bruner's quote. Although it only represents the view of one student, it indicates what the programme strives towards:

> *As the course was distance learning, it enabled me to work at my own pace but not in isolation. I was able to share opinions and knowledge with others on the course, from a good cross section of service providers. I realised I had a lot of knowledge but by sharing this with others and learning to look at this from a different viewpoint it allowed me to build upon this. I also became more confident on the panels and parent groups that I am involved in with ASD. I was able to give a presentation of the condition and how it affects my child at an inset day in our LEA on autism awareness. I was told this was the highlight of the day! I could never have been able to put this talk together had I not been on the Birmingham Course.*

4.10. Summary

This chapter is the first of two chapters exploring the meso level, with this chapter focusing on the pedagogy, the culture and the shared values of the community. This included scrutiny of the aims and objectives and wider documentation on the WebAutism programme in order to outline the pedagogical rationale for the programme before analysing data from module evaluations, external examiner reports and portfolio samples. The chapter explored how socio-constructivist and socio-cultural approaches guided an investigation of how the WebAutism learning environment enabled students to bridge a gap between everyday understandings and the scientific understandings of the field, the extent to which programme materials and their teaching methods enabled co-construction of knowledge and the extent to which dialogic learning is built into the programme. The chapter examined the tensions in bridging students' everyday knowledge with new scientific knowledge through exploration of how students develop new insights and understandings and how they show evidence of improved competencies.

Findings highlighted that the aims of the programme align with notions of good practice in the field. The pedagogy draws inspiration from a number of different teaching families, with an emphasis on a socio constructivist approach and the programme is delivered as a blended learning programme. Analysis of data sources found high satisfaction levels with the programme, including with the value of the content and the subject matter. Students reported that their general understandings of the field had changed, but more importantly that what

they had learnt had changed the practices and strategies that they used in their own work. However, findings highlighted that there was divergence between parents and practitioners, those working with adults and those working with children in relation to their feedback about programme materials. This is a potential schism that is explored further in subsequent chapters. Although students show understanding of key concepts in the field, integration of theory and practice was identified as a difficulty for students in assessed work.

CHAPTER FIVE: THE MESO LEVEL ACTIVITY SYSTEMS

5.1. Introduction

We saw from the last chapter that socio-cultural and activity theory gives us a social theory of learning which can act as a framework for recognising that people function in material environments that are endowed with cultural meanings (Daniels, 2001; Lemke, 1997), thus enabling analysis of learning processes as well as the characteristics of the context of implementation. This chapter explores the latter by viewing WebAutism as one overall activity system involved in delivering the programme, which includes the team that delivers the programme, and the different stakeholders involved in the production of the programme. This team is involved in an activity directed towards an object with a certain desired outcome, with the goal being to enable students to become better practitioners in the field. This is embedded in the culture of the programme and this object determines the goals and actions of the activity set (Engestrom, Engestrom & Vahaaho, 1999). The perspectives of socio-cultural, activity and social learning theory thus provide intellectual toolkits for viewing the team involved in the development of WebAutism as both an activity system (Engestrom, 1987) and as a goal oriented community (Henri & Pudelko, 2003; Lave & Wenger, 1991; Wenger 1998).

Engestrom (1999) suggests that activity theory can be summarised with the help of five key principles. These encompass that it is a unit of analysis that is defined as a collective entity oriented towards objects in which the activity is

mediated by artefacts; it is a community in which there will be different points of view ('multi-voicedness'), and the division of labour within it leads to different positioning for the participants; an activity system takes place and is shaped over time; contradictions within the system are the source for change and there is the possibility of expansive transformation. This chapter analyses the WebAutism programme team as an activity system using these five principles as key themes that are explored and that structure the subheadings of the chapter. The chapter has been shown to three different members of staff involved in the delivery of the programme and their views and perspectives have been incorporated.

5.2. Activity theory

Activity theoretical frameworks have extended Vygotskian theory (Vygotsky, 1978; Cole, 1996; Leont'ev, 1978) to include the concept of a community with differentiated roles or a 'division of labour.' Engestrom (1987) gives us a social or activity system as a unit of analysis and activity theory is seen as seeking to 'analyse the development of consciousness within practical social activity settings' (Daniels, 2004, p. 189) with the first characteristic of an activity set (Engestrom, 1987) being that it focuses on pursuit of a particular objective or activity. Within this framework, practices and processes are conceptualised as historically and collectively developed, mediated through the use of tools and signs, and constructed through participation in these practices (Daniels, 2001). They exist in network relations to other activity systems (Engestrom, 1999). Investigations are thus directed to both individual and collective aspects and psychological aspects of development are seen as located in cultural activities

through collective symbols and artefacts. Within this framework, joint activity or practice is the unit of analysis and the environment is modified through mediated activity.

Activity theory provides a framework for integrating three key aspects: the acting subject, the object acted upon and what is described as the mediating artefact, which is the tool or the sign (Daniels, 2004; Edwards & D'Arcy, 2004; Ekeblad, 1998). This approach captures the ways in which productive outcomes are dependent on a number of different factors including: the nature of the task or activity (Mason, 1991; Fung, 2004); the rules concerning who may act on what aspects of the task and their access to different tools to help them (Benzie, 2000); the ways in which these tools either enable or constrain individuals in performing the task (Jones et al., 2006) and the affective and social relationships between individuals, their roles and interaction with each other through the tools (Macdonald, 2002; Guldberg & Pilkington, 2006; Oliver, 2006). This includes how participants co-construct their current understandings through developing shared understandings and resources and therefore transform the object through this interaction with one another and the tools. In this holistic perspective, a learning environment that supports collaborative learning integrates various artefacts and spaces for acting, and allows for diverse individual and social participation.

This chapter uses activity theory as a way of understanding the WebAutism programme team, recognising that activity theory can enable a focus on shared tools and resources and how these are used to meet the goals of the community, thereby setting a context for a deeper understanding of the meanings invested in

the activity and for exploring differential use of the tools by focusing in on how they enable productive learning when students access them. The next five sections explore Engestrom's (1999) five principles of activity theory in turn.

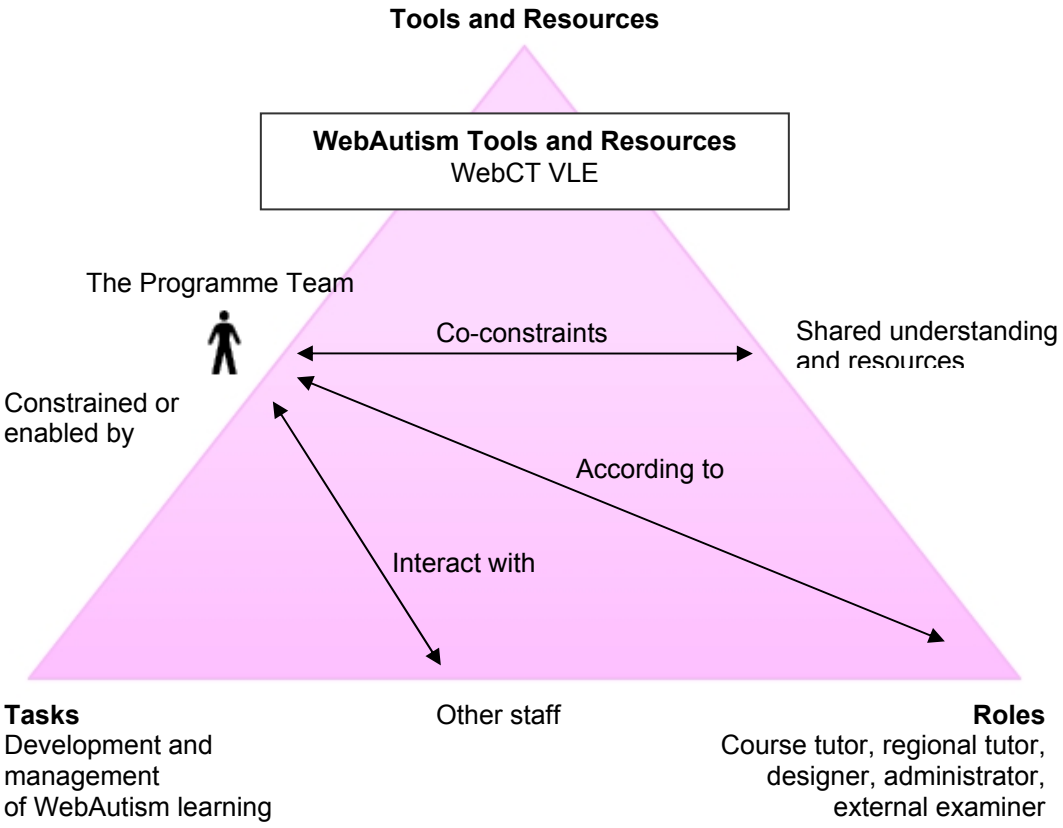
5.3. Principle one: The activity system as a unit of analysis

The first principle highlights that activity systems are units of analysis in which a collective group centre their activity round an objective that is mediated by the use of tools or artefacts (Engestrom, 1999). Goal directed and group actions need to be understood within the context of the activity system as a whole. Socio-cultural and activity theory thus enables us to approach WebAutism as an activity system built around the pursuit of creating a learning environment for the qualification of the University Certificate (ASD). The overall activity set consists of the programme team as a whole who work together to achieve community goals, which include technically supporting the communication channel itself; managing the academic community; and developing the academic content. This programme team interrelates with external examiners, students and other university and school departments. The resources for this set consist of the programme resources as a whole. This includes the WebCT VLE, the content within it and the administrative systems used to support it, the staff and the students. This broader activity set exists within the wider institutional environment of University of Birmingham, in which the activities of the set interrelate with many other activity sets, such as Information Services staff, the Admissions Department and the Student Records Department. Within the WebAutism activity set, there are three key activity sets contained within it and these exist in a

relationship to other activity sets. These can be conceptualised as the teaching activity system, the technical activity system and the administrative system.

In order to understand how the above aspects of the social unit interrelate and impact on one another, the chapter analyses how different activity systems are involved in the design and management of the WebAutism VLE, and how these work to create and maintain the programme in order to meet the design for collaborative learning at the institutional level of the programme. The chapter explores the roles and division of labour within the community, including how members of the community work together from diverse perspectives towards shared visions and goals. Analysis focuses on the rules concerning who may act on what aspect of the task and the access to different tools to help them as well as the ways in which these enable or constrain individuals in performing their tasks, thus giving a framework for how roles, tasks and tools interact to change the way that the activity system works. This encompasses notions of how it manages change. The activity theory triangle represented by Engestrom (1987) represents the social or collective elements of an activity system (community, rules and division of labour) whilst focusing on the importance of their interactions with each other, thus bringing the interrelationship between the human subject and his or her community into focus. An adaptation of Engestrom's representation of an activity system is used to conceptualise the above points (see figure four).

Figure 4: The WebAutism Activity System, after Engestrom, 1987.



The above representation captures the different aspects of the activity system and in turn acts as a framework for understanding the community. There are effectively three nested activity systems that exist within the above system, but these are visually represented separately in this chapter in order to pull out the differences between how these three systems work in terms of their roles, tasks and tools. The above adaptation of Engestrom's triangle captures a dialectical approach that focuses on processes. The lines in the triangle represent dynamic relations that are likely to be constantly changing and they also demonstrate different parts of the environment in which each part relates to

another and there is mutual interdependency. The lines therefore describe relations, between subjects and between subjects and objects. The corners of the triangles show the different components of the environment and these include tools and resources, tasks and roles. The object represents the goals of the community, which in this is shared understanding and resources. It is felt by many that the nested model of three interrelated activity systems can be a productive tool for research into computer mediated scholarly communication (e.g. Ekeblad, 1998; Plowman, 1996). The model can act as an aid for identifying units for analysis, for describing prevalent practices within the community and for locating important contradictions.

5.4. Principle two: Multi-voicedness and different perspectives

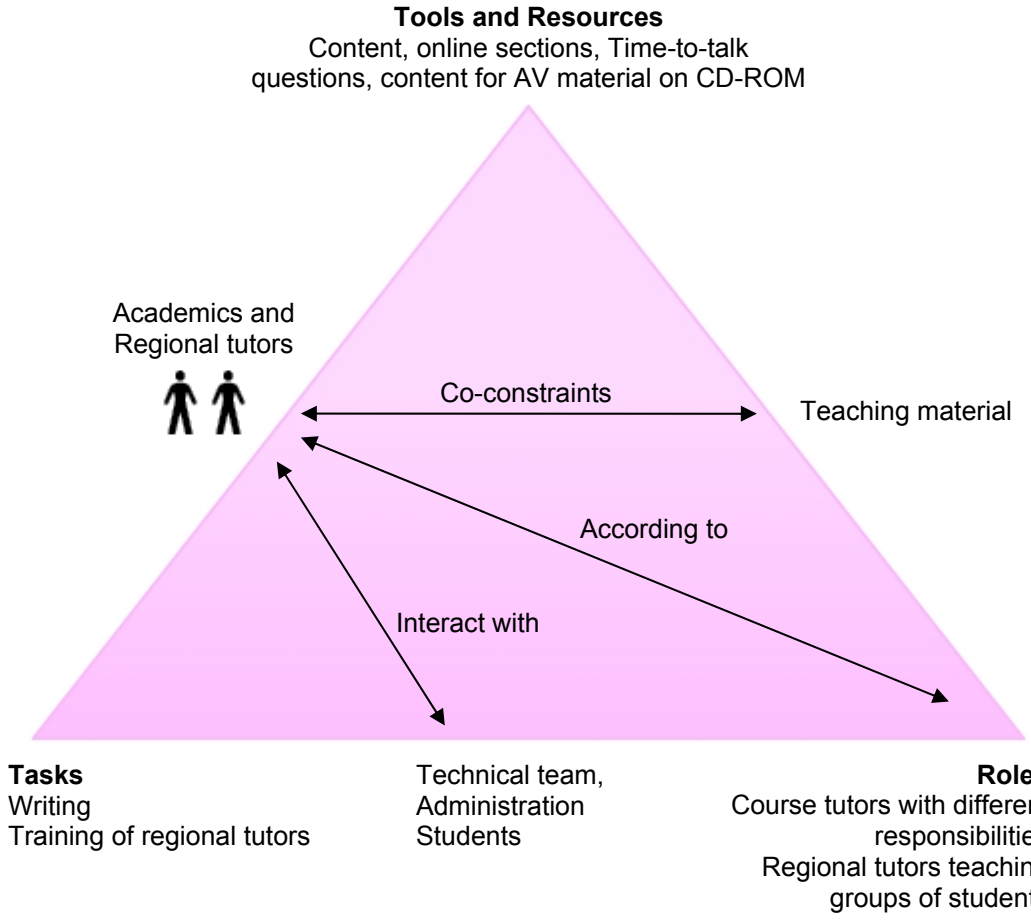
Engestrom's (1999) second principle stresses that any activity system will express multiple points of view, and will have a differential division of labour, This means that participants will have different positions within this with diverse histories, something which is further complicated when there are networks of interacting activity systems. In WebAutism these multiple points of view and differential division of labour can be explored in relation to the system that delivers the programme, which include all the members of the programme team. It can also be explored in relation to the larger activity system as a whole, which encompasses students. This chapter focuses on the programme team so will limit analysis to division of labour and differing perspectives within this system. The paragraphs below describe the three nested activity systems associated with the programme team in turn, highlights how they have changed over time and

outlines key roles, tasks and tools available to the different activity sets. Once I have outlined the roles, tasks and tools of the teaching, the technical and the administrative activity systems, I explore how these three activity systems interrelate through the creation of rules, tensions and contradictions that emerge through working with the tools and changing the object through this activity.

The teaching activity set consists of academic tutors based at the University and regional tutors who are spatially dispersed and work in the geographical areas in which students are located. This team interacts with the students, the technical team and the administrative team to create and develop content that aims to influence practice. This team is responsible for the creation of academic content for online sections, as well as pastoral and teaching support for the students. University based and regional tutors are all established members in the ASD field and have backgrounds as practitioners. The regional tutors support a group of students in their local area, unless they are running an 'online-only' group where students and tutors do not meet face-to-face. The regional tutors role thus includes running tutorials, whether face-to-face or online, overseeing Time-to-talk discussions, supporting students with study skills, marking assignments and giving extensive feedback on assessed work. The programme team and the tutors work closely together on the assessment process with a moderation process in which regional tutors mark the work whilst academic tutors moderate ten percent of assessed work, undertaking the role of offering constructive and supportive feedback to tutors whilst ensuring that the marking

system is equitable across tutors. The teaching activity system is represented below (see figure five).

Figure 5: The activity triangle for the WebAutism teaching activity system, applying activity theory after Engestrom, 1987.



The roles of the members of the teaching activity set breaks down into six key areas that interrelate and are closely tied with the goals of this activity set, which can be perceived as inducting students into the discipline or subject area of care and practice in the ASD field with the ultimate goal to support students to achieve the qualification of University Certificate (ASD). The key role of the teaching team is to develop teaching materials, which take the form of online

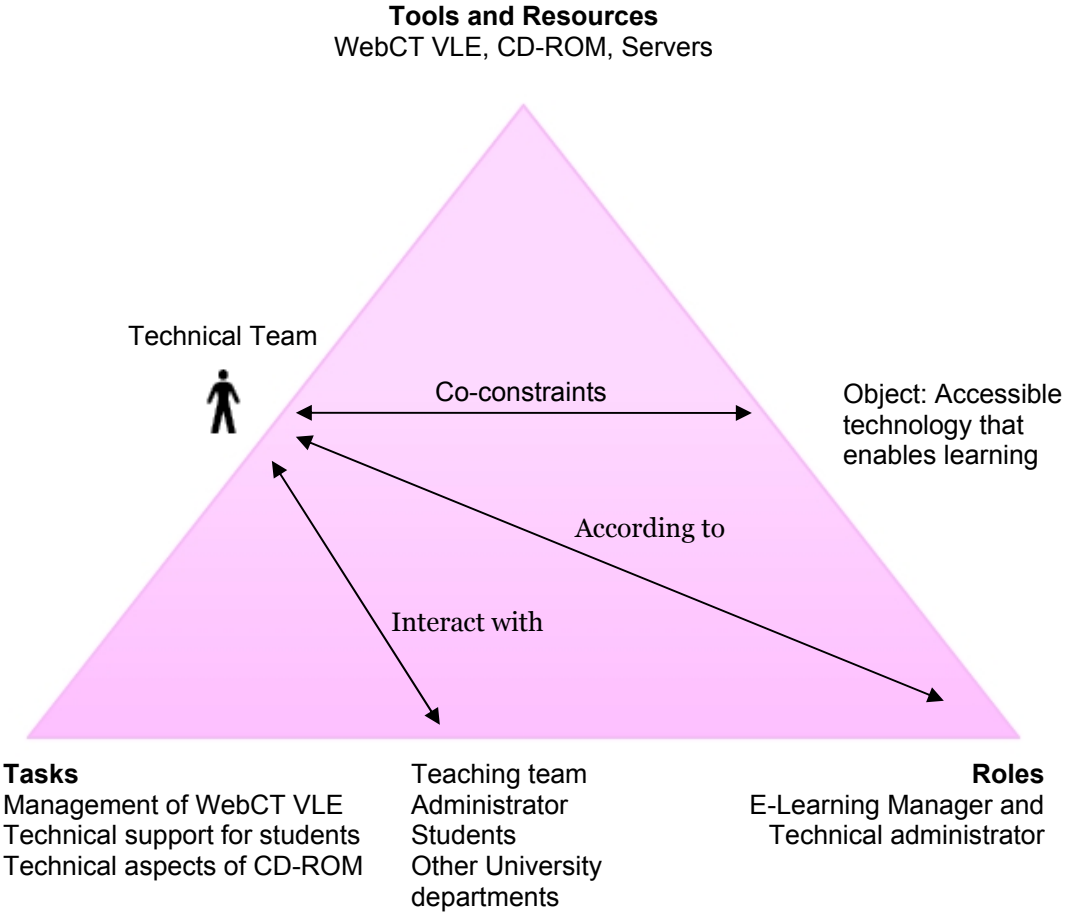
presentations, audiovisual material and compilation of module readers. The teaching team facilitate student discussion and engagement with programme material through face-to-face and online discussions and group work, including individual support for students and undertaking assessment and marking of students work. The team also develop written resources that focus on inducting students socially and supporting them in their study skills. There are a number of specific roles, tasks and tools associated with these different areas (see figure six).

Figure 6: Roles, tasks and tools of the teaching activity set.

Roles	Tasks	Tools
Development of programme materials.	Write online material; planning AV materials; development of module readers; setting questions for Time-to-talk.	Dynamic content management system with template for online presentations; CD ROM content management; printed text of module readers.
Facilitation of student discussion and engagement with learning.	Organisation of face-to-face tutorials; framework for online discussions.	Tutorials and online discussions through the WebCT VLE.
Assessment and marking of students' work.	Feedback of students' work; moderation, liaison with external examiner.	Marking guidelines.
Evaluation and development of teaching.	Action research cycle	Module evaluation forms, team meetings.
Student support: Inducting students, support with study skills.	Induction week, tutor and student handbooks; programme guides.	Tutor and student handbooks.
Management of aspects of the activity system.	Admission of students, organisation into geographical groups; allocation of RTs.	Administration systems.

The second activity system is the technical team. The goal of this team is to deliver the technological tools that can enable learning to happen in line with pedagogical vision but also to ensure that students can use the technology in their learning quest. This includes tools involved in managing and adapting the technology. This team is responsible for the resources related to technical delivery of the programme. This primarily includes a dynamic content management system, the WebCT VLE and CD ROM material.

Figure 7: The activity triangle for the WebAutism technical activity system, applying activity theory after Engestrom, 1987.



The WebCT space is populated with tools from this VLE, such as calendar, the study zone (content pages) and the asynchronous discussion board. This team is also involved with the process of customising this environment through developing its own icon set and labelling these to represent the elements of the programme. These icons signal to students how they can navigate round the environment as easily as possible. The organisation of programme material through these icons is important for reducing the cognitive load for students. Thus, a book icon guides students to the study zone content; a speech bubble icon guides students to the asynchronous bulletin boards, for example. These icons, and the organisation of the learning environment have been adapted and improved over the years. On examination of feedback, we see that students are largely satisfied with the study zone ease of access but that there are areas that need to be improved. A small sample of comments from students illustrated this:

> *I wasn't a computer whiz and was quite nervous, but the course is set up so well that it is easy to navigate.*
>
> *I found most of it easy enough but managed to completely miss out discovering what the portfolio titles were until my tutor told me!*
>
> *I was glad at the end of the Module to receive "where to find this" – it would help if you send a navigation guide at the start too.*

The roles, tasks and tools of the technical activity set are outlined in figure eight.

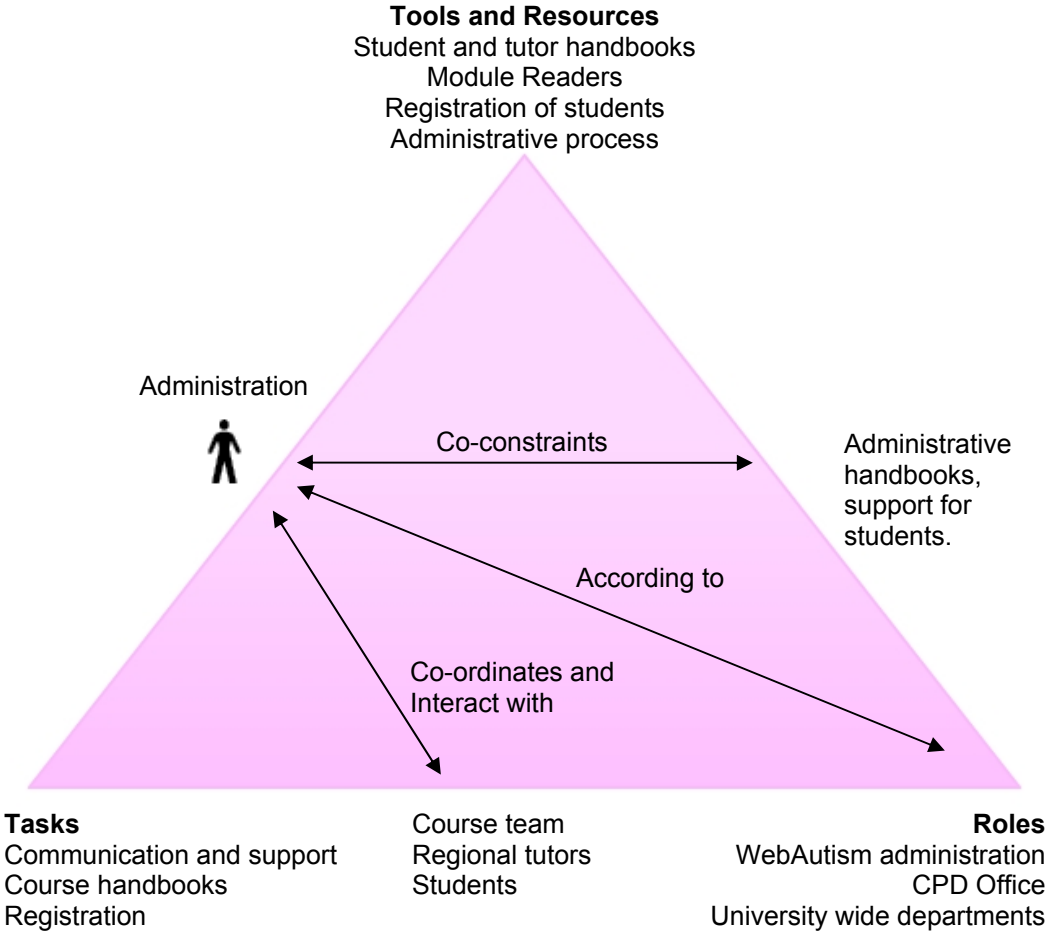
Figure 8: Diagram of technical activity set

Roles	Tasks	Tools
Management and adaptation of VLE.	Weekly back up of WebCT courses; electronic student records; organisation & 'look and feel' of online learning environment.	WebCT VLE, custom made icons, PDF versions of content, creation of bulletin board topic areas. Interface design.
Creation and maintenance of CMS.	Manage and produce content in back-end relational database, which is then linked within the WebCT VLE.	The purpose built content management system. Databases.
Creation (filming, editing) and production (media player and burning) of CD ROM.	Filming in provisions, editing of material, creation of specific media player the CD ROM.	CD ROM, mediaplayer, digital camera and video player.
Technical support to students.	Answer queries from students and resolve technical problems.	Email and bulletin board. Technical support email address and area on bulletin board.

Thirdly, there is the administrative activity system of the programme. This has responsibiity for dealing with student services and being the first point of call for students. The resources involved in this aspect of the activity system consist of student and tutor handbooks, module readers and other programme materials including for example letters and instructions informing students of University regulations, the expectations of the programme, including information such as submission dates and results of exam boards. Tasks and roles include being the first point of call for students, dealing with registration issues, distribution of

programme material and access issues. The overall goal or object of this activity is to enable administrative access for students and to act as a central communication point for all members of the team.

Figure 9: The activity triangle for the WebAutism administrative activity system, applying activity theory after Engestrom, 1987.



This is a unique programme and, therefore, requires a high level of administrative flexibility. It combines a traditional programme administrator role, with more innovative technical and student support aspects. The programme

administrator works closely on a daily basis with the WebAutism academic team and e-Learning staff, as well as with the thirty-five regional tutors (spread throughout the UK and Eire). The administrator also liaises with colleagues within the CPD Office, the School and more broadly throughout the University (for example student records, finance, CETADL). The 'blended e-learning ' nature of the programme arguably means that the level of personal support that the students and tutors receive is even more important than for campus students. Students need to know that someone is there to answer their queries and point them in the right direction when they are having problems.

Figure 10: Roles, tasks and tools of administrative activity system

Roles	Tasks	Tools
All areas of administration.	Day to day administration tasks, servicing committees, monitoring budgets, organising special events.	Letters, email, phone.
Student support.	Central point of contact for all queries, Admissions issues, extensions, leave of absence, monitor participation.	Letters, email, phone, printed documents.
Liaison between teams.	Organise team meetings, direct enquiries.	Minutes, email, phone.

We can see from the above descriptions that the different elements of the activity set bring different knowledge bases and competencies to the set. They will also have a variety of perspectives depending on those competencies and

knowledge systems. However, this concept of 'multi-voicedness' also needs to take into account that this delivery of the WebAutism pedagogy through the creation of the above tools are designed with purposes in mind – features that from the perspective of the designer will make them effective but often require a shift in the cognitive constructs of the user (the teacher or learner) before the user can see how to use them as a tool. Moreover the designer designs tools that are actionable in a context that has a varying degree of authenticity in relation to the context of the user. It is often difficult for the designer to see the tool or its use from the perspective of the teacher or learner since they do not actually immerse themselves in the same context.

Although the activity sets have different responsibilities and very different roles and tasks there is nevertheless much overlap between the tools that they work with. The three activity sets work together towards a specific mandate (Fischer, 2001) of constructing learning objects for the programme, so the above roles and tasks show that different expert individuals work with the tools in different ways according to their competence and experience. The activity sets therefore need to build shared understanding of the task in hand and this pursuit of objectives requires the possibility for participants to question, discuss and finally establish the concepts and objects serving the project. It has been postulated that if the community manages to benefit from heterogeneity of the diverse knowledge and competencies of their members in this type of community, they can exhibit great capacity for innovation and social creativity (Henri & Pudelko, 2003). This is likely to happen over time and through changing

the object through activities. This brings the discussion on to the third activity theory principle, that of historicity.

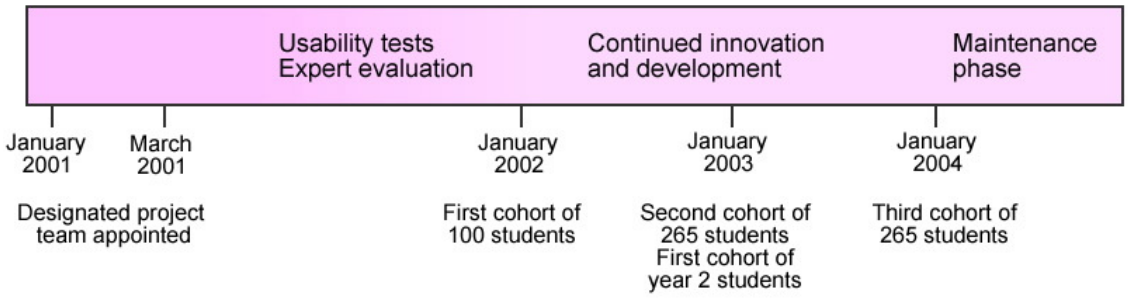
5.5. Principle three: Historicity

The third principle is that activity systems take place and are formed over time (Engestrom, 1999). It is important to study the history of the activity set. This needs to include the history of the activity and its objects and also the history of the theoretical ideas that have shaped this activity. In this research, this has been attempted in terms of exploring the development of the wider field of practice and there has been some attempt to situate learning and teaching theory in current and historical contexts in the last chapter. Here the aim is to explore the history of the activity and its object by highlighting some key moments in the development of WebAutism that identify contradictions that emerged in the community, which through their resolution enabled further understanding and common constructions between different activity sets.

The programme is based at the School of Education and at the early stages it had strong input and support from CETADL (Centre for Educational Technology and Distance Learning), a University centre that was set up and developed to give support to staff embarking on innovative programme delivery at the University of Birmingham (Pearshouse & Sharples, 2000). A number of other people were involved in different ways in the development of WebAutism, starting with the appointment of a designated team to develop and deliver the programme, with all team members appointed by March 2001. In January 2002 the WebAutism programme at the heart of this case went ‘live’ with its first

students learning together online. The Programme of Study has been running with a new cohort of students every January since then. The development funding was given for a period of three years, after which the programme met its costs through student fees. The composition of the team changed over time with staff coming and going but once the funding stage was completed, the programme entered a 'maintenance phase'. This was taken to mean that large-scale technical development was now complete although development related to learning and teaching would be ongoing.

Figure 11: Timeline representing key developments in the history of WebAutism



WebAutism was a programme which, having received external funding, was developed from scratch by a designated team that were appointed for this purpose. In order to create an innovative learning environment that would meet the needs of the students, the team worked together to create a number of tools. Development of tools resulted from a gradual process of discussion and shared perspectives, which in turn influenced the division of roles and tasks within the community. The development of the tools themselves took shape and changed over time as the activity sets worked together to modify them. Given the centrality of teaching materials to the goals of this community, it is useful to explain the

development of the tool of the online Sections to illustrate the historical development of a tool but also as an example of how the creation of a tool can influence roles and lead to contradictions.

Once a decision had been made to produce online Sections, the team were clear that these should not just become ‘books on screen’. Rather, they should be developed in such a way that they would suit the notion of learning from a screen. In meetings, team members went through many iterations of the form that this should take with presentation materials being tested through usability and modified accordingly. This usability testing focused on the different aspects of the tool involved in its creation and covered evaluation of content, the mechanics of the website, and ergonomics assessment and the interaction value. These were all important elements that were likely to come together to influence students’ perceptions and experience of undertaking study. In order to produce these materials, academic and technical staff worked closely together with clear divisions of labour, supporting one another to produce the final version of online presentations that were used with the first cohort of students (which have been further modified through student feedback in subsequent years).

Thus development of this tool started with conceptual understanding (discussions take place in team meetings about what the research can tell us about how people learn online), leading to the development of the product through team members working together at every stage of that development. In practice, this lead to the academic deciding on key content to include in these presentations, a technical member of staff then created a word template into

which the academic fitted the content (this in itself leads to fine tuning of the skills of writing for this medium), the academic writes the content and lessons from this process lead to further development of the tool; finally technical members create an online template which in turn is incorporated into the WebCT VLE. The tool is thus modified at numerous stages of its development and continues to be so as a result of student feedback after the programme is launched.

The development of this tool leads to the development of a further tool, which in turn also affects roles and divisions of labour. A bespoke dynamic Content Management System (CMS) was created, based on the above templates of online Sections that were developed specifically for this programme of study. This dynamic CMS was developed to help manage large volumes of programme content and to support authoring by academics. This bespoke CMS was a direct consequence of the close interrelationship between members of the designated team as it arose from joint discussions about pedagogy, about how to structure the learning environment and how to write the section material. The developer of the CMS made the point that it was a reasonably uncomplicated system to develop because of the tight structure of the content and the fact that the content had been specifically written for web delivery. Once content has been completed in the CMS, sections of content are uploaded into WebCT. Thus the development of one tool led to the development of another and through this roles changed. Whereas previously, academics would write content that would need the input of a technical member if modifications were to be made to that content, the development of the CMS enabled every member of the team to work online

to write and preview new content, and to browse the library of images. The historical development of tools has here become an important way of understanding how tools, tasks, and roles interrelate to change the activity system itself.

5.6. Principle four: Contradictions as sources of change

Engestrom's fourth principle applies a dialectic approach to the understanding of the activity system and identifies contradictions as the central source of change and development (Engestrom, 1999). He explains this in terms of structural tensions in and between activity systems and elaborates this by explaining that when an activity system adopts a new element from the outside (such as a new technology or a new object), it might lead to a contradiction where an old element collides with the new (such as roles or division of labour). This can create conflict but it can also enable innovation through the attempts to change the activity. In relation to WebAutism, there are a few examples that can be used to illustrate this point. The first relates to the decisions taken about the software to use as a basis for the learning environment. In the early stages of development of the programme, team discussions focused on the pedagogic vision, the needs of the students and how the team envisaged those would come together to mould the creation of the online learning environment. There was consensus among team members that pedagogy should drive the creation of the learning environment and that this pedagogic vision needed to inform the type of software to use in order to realise this vision.

The technical members of the team were particularly keen that they should

develop their own software with functionalities that would be driven by the pedagogy and vision of the programme. The team worked on this software for the first seven months of the project. Two key developments contributed to the fact that this plan needed to be abandoned. Firstly, a key member of the team had to take two months off at a crucial time of the project and it became clear that the vision could not be realised within the time constraints through which the team were operating. Secondly, institutional constraints negated against the further pursuit of this strategy in that the institution decided that 'off the shelf' software should be used and that WebCT should become the institutional VLE supported by the University.

There are clear contradictions that emerge from this institutional level decision and that affected the way that the programme team needed to change its focus. It involved changing direction and changing roles in order to meet the deadlines for the launch of the programme. One key contradiction that emerged is that the philosophy behind the WebAutism programme is a socio-constructivist one. It has been argued that WebCTs underpinning philosophy owes more to traditional models of teaching than socio-constructivist models of learning. Given that WebCTs underlying design pedagogy is widely seen as being based upon a traditional approach to teaching, some members of the team felt that it may not be the best choice for the WebAutism case study. These issues posed contradictions for the programme team but given that there was no choice but to proceed with WebCT, the programme team needed to address how to make compromises. In fact, with a short timescale for re-configuring how to implement

the pedagogical vision, it necessitated that core team members needed to work together very closely to find practical solutions for trying to make WebCT 'fit' the vision. Adaptations and customisation needed to be made to the VLE that would allow it to get as close as possible to the pedagogical vision.

This resulted in some features not being used at all (such as the quiz) whereas others were adapted. One very important constraint on the team, was the fact that WebCT allowed only one discussion board per course. The team was clear that online discussions were a crucial part of the pedagogy of the programme. In addition, WebAutism would have an intake of one hundred students for the first year of the programme, and these students were to be divided into geographical and online groups run by regional tutor. In line with a socio-constructivist pedagogy, asynchronous discussion opportunities needed to be integrated into the programme itself, but the team felt that an optimum number of students for the kind of discussion would be between ten and fifteen students. Meanwhile, the programme was structured in such a way that all students should still share access to the same content.

The local design team therefore had to modify WebCT in ways that neither they nor the WebCT designers could have envisaged. They added additional functionality through integration of materials developed using other software including interactive problem-based multimedia. They also linked several spaces together to enable multiple discussion boards to be accessed from one discussion page as well as providing specific links to discussions from the study zone. This was a complex process that required high levels of technical skills,

beyond the skills of academic tutors. However, in order to address these issues, it required different members of the three activity sets to work very closely to come up with a solution. The solutions could only be arrived at through individuals developing better understandings of the perspectives and skill sets of other members of the community.

This work also meant that once WebAutism had reached a stage of 'maintenance' and required less technical resources, the technical team could use lessons learnt and materials that had been developed through this process for other programmes in the School of Education, thus impacting more broadly on the teaching activities in the School as a whole. However, students are likely to be conscious of the tool when it gets in the way but student feedback highlights that the resulting learning environment is fit for purpose as the use of WebCT is seldom referred to as a barrier, other than when the whole system goes down, which would have affected student feedback regardless of the software used. However, it is equally clear that simply providing a default WebCT course, with all the tools in it, but without specialising them for the purposes of the course would limit students' experience.

5.7. Principle five: Expansive transformation

Activity theory's final key principle draws our attention to the fact that activity systems move through cycles of qualitative transformation (Engestrom, 1999). These might take place over long periods of time and it is possible that WebAutism has not existed long enough to fully identify these in the way that Engestrom envisages, although the description of the above processes in

development and modification of tools show some evidence of transformation. Engestrom (1999) defines expansive transformation as happening when the object and the motive of the activity are changed substantially to embrace a radically wider horizon of possibilities than in the previous mode of the activity and that it can be understood as a collective journey through the zone of proximal development of the activity. Thus, the WebAutism team have changed and developed, not just in relation to the tools and the division of labour between the activity sets but also in terms of the organisation of the activity set itself. For example, as the technical team became responsible for all e-learning development within the School, this led to changes in parameters and responsibilities over time. Gradually, the update to new versions of WebCT became the responsibility of Information Services (IS) whilst local e-learning members of the core design team continued to manage technical induction and remained the first point of contact for student enquiries. Technical support was split for a time between three different activity systems on three different sites – CETADL, IS and the local e-learning team.

This understandably increased the complexity of managing communication processes. This also led to some loss of control by the local team with customisation of the environment also requiring more complex negotiation. One of the positive aspects of centralised support is a central help-desk that can answer student enquiries at unsocial hours late in the evenings and at weekends. One of the negative aspects of this provision is that students may feel that this support is remote as the person on the help-desk is unlikely to have knowledge

of the particular course material.

Expansive transformation is also more likely to be located in areas outside the activity systems which have been described in this chapter, to include other networks of interacting activity systems, and in particular, how the delivery of the programme impacts on the student group itself. We saw in chapter three that students are involved in a number of interacting activity systems in that they work in different settings and have different roles, that some are carers whilst others are practitioners. Expansive transformation for them is likely to be located in the extent to which WebAutism can facilitate learning in a way that enables students to move into new spaces of changing identity- new spaces that depends on them being able to draw on both their work or practice identity and their learner identity to create this new space of a changing identity (Reeves & Forde, 2004).

This involves assessing the progress the 'new' practice is making against the 'old' in order to track how those involved are making up their minds both as individuals and as a collective, thus investigating connections between individual and social learning processes. Given that the WebAutism students are practitioners and carers and that a key aim of the course is to change practice, a model that allows us to look at what changes, and for whom, in this third space, is therefore particularly pertinent. This entails undertaking further examination of online bulletin board discussions to try to determine whether students express joint understandings and shared repertoires. It is felt that this is a useful approach for investigating WebAutism as it allows for a focus on the spaces of learner, practice and changing identity through examining online discourse on the

programme itself, but there can also be a focus on work or practice identity and tracking that through, in terms of how that might change as students progress through the programme, particularly in terms of how students talk about this change.

5.8. Discussion

The above findings highlight the importance in any study of the use of ICT to look at the broader context of the entire learning environment and the organisational systems behind it. Lockwood and Gooley (2001) highlight that there is more to offering programmes at a distance than just providing good teaching and learning materials. These programmes also need a range of academic and administrative support services and an appropriate delivery infrastructure. From the above sections we can see that it has been critical to the design process to bring together in one team those familiar with the physical properties of the tools and those who understand the pedagogic and cultural requirements of the programme.

Furthermore, activity theory can provide us with a distinct framework for understanding systems in terms of division of labour and culture. As such socio-cultural and activity theory can successfully act as analytical models with the capacity to integrate technical and social aspects, offering conceptual tools which enable study of the interrelationship between infrastructure, technology, the institution, the subject or discipline and the pedagogy. The above analysis suggests that WebAutism does indeed consist of a group of people negotiating and working toward a common goal using shared or common resources. In order

to change the tools and thus the object of activity, they work together to share the knowledge and approaches in their respective spheres of speciality (Henri & Pudelko, 2003). The members, through representing varied perspectives, have different stakes in the community and in order to move forward, the activity set needs to elaborate common meanings in order to achieve synthesis of their diverse knowledge systems. This process of negotiation of meaning then requires a balance between participation and reification of collectively produced knowledge systems (concepts, tools).

The WebAutism team is also a community that is composed of individuals who are interdependent and interconnected within the community context (Barab & Duffy, 2000). The above analysis highlights that the WebAutism activity system is marked by a high degree of involvement and cohesion of its members akin to a goal oriented community (Henri & Pudelko, 2003) in which there is provision of mutual help and support, sharing of common meanings and affirmation of common identity. The activity systems work together to meet specific needs and solve specific problems. Some of their exchanges are action centred and focus on what must be done to carry out the project, whereas others are project oriented or focus on management of group procedures. The collective creation of objects reflects the activity of the community and these testify to the shared meanings that members develop of the project.

We see from the above that Engestrom (1987) and Ekeblad's (1998) concepts of three nested activity systems can help reveal the way different overlapping systems or communities of participation can interact. The three

nested activity system triangles are used to represent the different activity systems of those involved as different individuals take responsibility for different aspects of achieving community goals: technically supporting the communication channel itself; managing the academic community; and contributing to the academic content. There are nevertheless some limitations in using a simple three-triangle representation for representing the case study, as these three systems are themselves nested within other networks of interacting activity systems. These include for example central and local technical support teams, who split roles for maintaining WebCT servers, managing access privileges, inducting students into the VLE, monitoring use, customising the VLE and developing electronic resources.

Defining the unit of analysis can be problematic too when undertaking this kind of research. In the WebAutism programme the regional tutors, lecturers and teaching support staff have different roles and responsibilities within different activity systems for creating content resources, setting and marking assignments, helping students with enquiries and facilitating discussion. These are in a sense part of the larger activity set of the programme but they also belong to subsets with their own tools and resources and their own goals. For example, regional tutors belong to a distinct activity set of regional tutors who have their own goals, tasks, roles and tools, as distinct from the University tutors and those have not been explored in detail here. In addition, the administrative set manages the administration of the programme but these activity sets are also nested and belong to their own activity sets including the broader CPD administration, the

School and wider central University administrative systems.

5.9. Summary

This chapter focused upon examination of the WebAutism case study from the perspective of the structures of organisation, system design or 'the community of designers' and the level of the user or the 'community of tutors and students' (Ekeblad, 1998; Jones et al., 2006). In this community of tutors, administrators and designers, the participants work with the same tools but from a different perspective and vantage point with different ways of reifying their practice. The above system space has their own set of rules, tasks and tools but these are likely to differ from the tasks, roles and rules of the community of tutors and students, despite these different activity systems accessing and working with the same tools (for example the WebCT learning environment, the online Sections and the online discussions). By researching how this community of teachers, designers and administrators work together in relation to tasks, roles and tools, we gain further understanding of the meso level of the programme. This provides data on how the values and pedagogy are translated into structures and systems and furthermore shines the lens on the broader WebAutism community, which includes tutors, designers, administrators and students. Having gained further understanding of the meso level, it is now possible to move on to examining the detailed micro level of the tutor group, through analysis of online discussions.

Findings highlight that the activity system of WebAutism consists of three separate activity systems that are closely integrated: the teaching team, the

technical team and the administrative team. This close multidisciplinary team generates learning activities through a process of contradictions that are resolved through shared praxis and which ultimately lead to further innovation. Participants work with the same tools but from different perspectives. The members have various stakes in the community and in order to move forward, the activity sets need to elaborate common meanings in order to achieve synthesis of their various knowledge systems. This phase of the research highlighted the need to distinguish between the community of system design, which includes the community of designers and pedagogues and the community of users, which includes the tutors and students.

CHAPTER SIX: THE MICRO LEVEL DISCOURSE ANALYSIS

6.1. Introduction

The last two chapters focused on the meso level of the WebAutism programme, and undertook analysis of the pedagogy, the values underlying the programme, and the organisational systems and structures used to deliver it. Whereas chapter four gave a pedagogic rationale for the aims of the programme, chapter five analysed how the development of the teaching tools arose through the emergence of the different perspectives of the interlocking activity systems involved in creating them, ending the chapter with highlighting the need to distinguish between the activity sets of the community of designers and those who deliver the programme from the activity sets of the tutors and students, who are effectively the users of the tools and the learning environment. This chapter focuses on the micro level and on the activity sets of the tutorial groups consisting of students and tutors. A study of the micro level aims to build up a picture of the 'microculture of the classroom' (Alexander, 2004). In this instance, the classroom becomes replaced with the tutorial group, and we build up a picture of its 'microculture' through analysis of online discussions.

As explained in previous chapters, a large part of this study is based upon research and discourse analysis of online discussions partly because these are a key component of WebAutism and are built into the structure of the programme but also because this type of analysis can hopefully tell us much about how different activity systems interrelate, how the community is constructing itself, how dialogue enables the development of community and to pull out significant

moments in the construction of community (Engestrom, 1999; Ekeblad, 1998; Henri & Pudelko, 2003). The analysis of online interactions therefore has the potential to enable us to understand how the students build up conventions and rules about how to act with one another (including routines and rituals) as everyday activities and look in detail at how these activities are constructed (Engestrom, 1999; Henri & Pudelko, 2003). I also hope that this analysis can enable understanding of the community as a whole, and the culture that includes collective values and unique ways of mediating the values of the community (Lave & Wenger, 1991). The study of the tools in this community is therefore concerned with the symbolic forms of tools as expressed through written dialogue. The interest is with how the tool of online dialogue is used by students and what this tool can tell us about both the system itself and the productive learning that is taking place through the use of compound tools, protocols and written text based messages.

In order to achieve this aim, the process of deciding on an appropriate methodology and methods for the analysis of this discourse is rooted in the broader theoretical framework of the research. This chapter explains how the process of analysing online discussions has evolved in this study. After outlining a contextual background to current research in the field of online dialogue, I explain how the theoretical frameworks of the research have informed decisions about which aspects of online dialogue to focus on, through three phases of empirical investigation. The chapter then explains the choice of discourse analysis methods and sampling decisions. I do not refer to empirical data in detail

in this chapter as this chapter is concerned with explaining methodological considerations and the subsequent three chapters undertake empirical investigation according to the methodology and methods outlined here.

Before going on to explain how I arrived at a methodological approach to the analysis of online bulletin board discussions on this programme, I need to insert a word of caution here. The methods described below were arrived at through a number of processes that involved analysis of data and reflection on theory, using a number of different approaches, and moving back and forth between theory and data until I arrived at the final synthesis that is explained here. Due to the amount of issues to cover in this thesis, and due to the fact that an in-depth explanation of that process will detract from the flow of the thesis, I choose here to let the reader know that this process took place but do not attempt to describe it. The next section focuses on some of the specific issues that make the online discussion medium unique. This then sets a context for my justification for why I have chosen a specific research approach for this part of the research.

6.2. The research context

> Let the dialogue about dialogue begin. It concerns thinking, learning, knowing and understanding; but also power (Alexander, 2004, p. 48).

This quote was chosen for this chapter because it draws our attention to the importance of dialogue in learning. There has been much research focusing on how encouragement of discussion and collaboration in education increases student involvement, engages students more in the learning process, and

promotes student achievement and satisfaction (Clark, 2001; Hung & Chen, 2001; Garrison & Anderson 2003). The ability of students to regularly participate in discussion is here seen as important to the learning experience. One of the key issues facing researchers in the field of networked learning is how the various technologies can be used in distributed learning in order to create effective learning environments and to understand how they impact on the discussion processes (McConnell, 1994).

The specific communication medium for this research is online bulletin board discussions. This does of course represent a very different category and mode of communication from any other communication medium (Garrison & Anderson, 2003). There is clearly complexity in this type of communicative interaction and there is a need to attempt to understand its effect on the learning situation. The first issue to highlight is that students are interacting through writing rather than through speech. Text based modes of the computer medium offer the learning advantages potentially contained in all active text production given that writing confronts us with our thoughts as they are emerging and mediates their further development (Pilkington and Walker, 2003). It has thus been argued that a new interdisciplinary science of the text is emerging and that writing is not a poor substitute for physical presence and speech but is another fundamental medium of expression with its own properties and powers (Feenberg, 1989). In the case of an online discussion board, online participants are presented to one another through written language and are engaging in a

form of communication that has the potential to become ‘dialogue’. We can thus no longer assume that writing is more formal and less personal than speech.

In this context, some see the written word as a better medium to mediate recall and reflection and that an asynchronous discussion means that the student has more time to reflect upon and answer someone else’s contribution, therefore sometimes leading to more thoughtful contributions, with possible inherent advantages in elevating the cognitive level of the exchange (Garrison & Anderson, 2003). More specifically, by providing opportunities for learners to consider strengths and weaknesses of ideas from multiple perspectives, it has been argued that these forms of interaction and approaches to learning favour the construction of knowledge and help to develop critical thinking in learners (Castles, 2004). The cognitive load is shared and thus also helps learners to engage in ideas in a deeper sense (Lapointe & Gunawardena, 2004). Lapointe and Gunawardena (2004) found that the structural path between self-reported peer interaction and self-reported learning outcomes was strong and statistically significant. Webb, Jones, Barker and Van Schaik (2004) report similar results in their research, which found positive correlation between module learning outcomes and participation in online dialogue.

The research community has also focused on affective and social factors associated with online learning. It is quite different from meeting people face-to-face in that one cannot see the physical and facial reactions of the person one is communicating with (Dietz-Uhler & Bishop-Clark, 2001). Body language and verbal intonation can have a profound effect on how a message is interpreted.

This absence of social context cues and non-verbal behaviours of communication has been found, by some, to lead to feelings of de-individuation, a reduction in accountability and a loss of self awareness, sometimes making the environment uninhibited and de-personalised (Kanuka & Anderson, 1998).

Other problematic factors that have been highlighted include the fact that the asynchronous nature can also lead to large and complex collections of messages (Kear, 2001). Divergent lines of communication and parallel nature of discussion extended over time can lead to confusion and can appear disorganised on the screen, particularly when there is lack of 'threading' (posting organised under subject headings). Threading facilities help students to cope with this by structuring their discussion into parallel 'conversations'. This can lead to 'chaos' in the flow of information (a particular problem in active discussions or in those involving many members) as discussion threads can appear as separate conversations. This threading can have a significant effect on how students use the system (Hewitt, 2001). Hammond (2000) notes that although the time and place independence of asynchronous discussion is an advantage, it can also create a lack of urgency in responding because there is no presence of other parties. Writers have expressed concern that when computer-mediated communication fails, then the results can be social fragmentation as well as socially inappropriate behaviour (e.g. Dede 1996). Other studies indicate that isolation is generally not considered a big problem in web-based courses but that students can experience anxiety, frustration and confusion (Hara & King 1999).

However, there is a substantial body of research emphasising the positive social and affective factors associated with online communication environments (McConnell, 2005). One of these includes the fact that it can be more impersonal, free and uninhibited with an increase in warmth and self-disclosure in online environments (Garrison & Anderson, 2003). Online virtual communities have been found to be supportive environments in which members can develop their identities as professionals (Allan & Lewis, 2006; Stacey, et al., 2004). The importance of trust is emphasised (McConnell, 2005), with some seeing it as an important arena for socialisation or professional development (e.g. Gordin, Gomez, Pea & Fishman, 1996; Chalmers & Keown, 2006). Littleton and Whitelock (2004) point to the way that this environment can also be a powerful resource for collective memory.

The literature on computer-mediated communication (CMC) thus presents some conflicting evidence regarding its effect on communication, indicating that it sometimes hinders and sometimes facilitates the achievement of objectives. The research literature is clear, however, on the fact that merely forming a group and providing the technology will not lead to learning (Ellis, Goodyear & O'Hara, 2007; McConnell, 2005). There are a number of variables and factors that can contribute to whether a teaching and learning environment generates learning in the students, just as there are in any learning environment, and students learn when they perform activities that trigger specific learning mechanisms (Dillenbourg, 2004; Salmon, 2000; Laurillard, 2002). As in any type of discussion forum, be it online or face-to-face, there are likely to be a variety of factors that

contribute to the quality of discussion and the extent to which it leads to learning (Chalmers & Keown, 2006).

Key issues include the role of the tutor (Littleton & Whitelock, 2004), the significance of role allocation and provision of collaboration scripts in helping structure and sustain online debates (Pilkington & Walker, 2003), the importance of focusing on what students have learnt through discussion, such as learning of argumentation skills (Pilkington & Walker, 2003), the associations between how students use the technologies and the nature of tasks, discourse and cognitive change (Dillenbourg, 2004). Kneser et al., (2001) summarise the forms of interaction that are considered to contribute to learning. One is articulation of self-explanation; another is constructive conflict, co construction and negotiation, asking questions and transactive reasoning. These findings concur with Ellis et al.'s (2007) recent research that found that worthwhile learning through discussion is likely to occur when it is understood that the purpose is to encourage holistic thinking and understanding; when face-to-face approaches involve analysis of experiences and opinions to reflect on key ideas; and when online postings involve an intention to reflect on postings to evaluate them so that the key ideas being discussed can be challenged.

The research community recognises the need to be able to comment on the moment-by-moment processes of group learning in the online environment and to capture (through development and application of analytical tools) knowledge and skills as these emerge over a series of messages or discussion protocols (McConnell, 1994; Henri, 1992). It is recognised that these processes are poorly

understood in face-to-face contexts and that communication through the online environment provides another layer of issues worthy of investigation in their own right (Kneser, Pilkington & Treasure-Jones, 2001; Pilkington & Walker, 2003). In particular the notion of what it means to be a learning community and the mechanisms, rules and roles adopted in such environments, the artefacts created and their distinctiveness as objects to support further learning cycles (Dillenbourg, 2004). The fact that the WebAutism programme yields rich discussion artefacts that can be analysed in these ways gives rise to unique opportunities to study the needs of learners' training in this field. There is therefore potential to gain insight into how students learn through and with one another in this multi-modal blended e-learning environment and for this insight to be of value to others involved in similar types of programmes. The purpose of this part of my research (analysis of online bulletin board discussions) is therefore to situate the WebAutism online discussions in context and to explore the roles of community members and the sharing of goals, activities and tasks- the kinds of learning taking place that are dependent on ethics, trust and social capital. This entails a particular focus upon the interactive processes in building a sense of community and transforming practice. It also entails the adaptation of discourse analysis tools to this particular environment.

6.3. Discourse analysis

Hammersley defines discourse analysis as 'detailed analysis of language-in-use, whether this takes the form of speech or text' (Hammersley 2002, p. 2). The concept of discourse analysis nevertheless covers a multitude of different

approaches. The approaches vary in focus in terms of the sorts of knowledge they claim to make as well as in the techniques they employ. Hammersley (2002) states that we can distinguish between analysis that is restricted to conclusions about discourse itself and that which is directed towards social processes or structures. He concludes his paper by stating that most discourse analysts fall in between the two extremes: focusing more on local contexts and/or treating contextual knowledge as a fallible resource to be used in a tentative fashion. This research has taken the approach throughout that we cannot understand what is going on in a particular interactional episode unless we know its place in the wider societal context. Discourse analysis is thus a way of looking at social practices through the properties of text and in particular looking at changes of practice (Fairclough, 1992). I am interested in analysing how language is used to enact activities, perspectives and identities and how it fits the context or situation in which communication takes place.

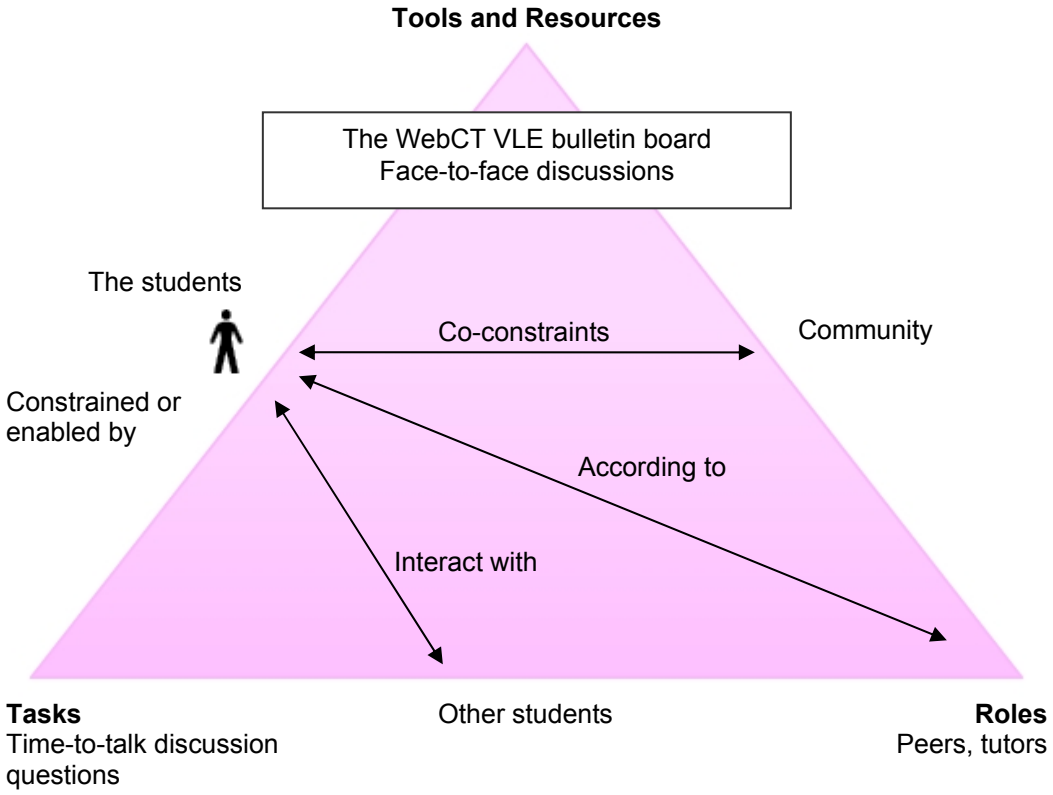
This socio-cultural perspective attends to both meaning and social context, concurring with Stubbs, who highlights that ‘there is no use of language which is not embedded in the culture’ (Stubbs, 1983, p. 8). This notion of language as social practice implies a dialectical relationship between the language, the context and the social structure that frames it (Hammersley, 1992). These things shape the discursive event but it also shapes them. Creese (2005) highlights that this signals a fluid way of thinking about language, identity and belonging. Online conversation can also be viewed as an ‘activity in context’ which cannot be ‘decoupled from the artefacts, technologies, symbols systems, institutional

structures and other cultural paraphernalia within which it is constituted' (Crook and Light, 2002, p. 156).

6.4. Theoretical perspectives

In order to analyse productive learning within the WebAutism community, there is a need to develop robust discourse analysis tools and the first step towards this is to clarify the focus for this part of the research. In the last chapter, the activity theory triangle guided the investigation of the activity set that delivers the programme. In this part of the research, it can set parameters for the aspects to investigate in relation to the micro setting. Returning to the activity triangles used in the last chapter, the activity system at the micro level of the tutorial group can be represented as consisting of tutors and students who interact with one another towards the goal of knowledge generation, changing practice and community construction, through interactions with one another and resources (see figure twelve).

Figure 12: The activity triangle for the WebAutism tutorial group activity system. Applying activity theory after Engestrom, 1987.



One of the aims of the analysis of these online discussions is to understand organisational structure at the micro level and simultaneously to explore whether this community can be described as a community of practice and if so, how it might develop through participants embarking a 'journey of meaning making' (Wenger, 1998). In this respect, it is clearly important to recognise that productive outcomes are likely to be dependent on a number of different factors including: the context of the wider pedagogical environment (Oliver, 2006); the nature of the task (Mason, 1991; Fung, 2004); the rules concerning who may act on what

aspects of the task and their access to tools to help them (Benzie, 2000); the ways in which these tools either enable or constrain performance on task (Jones et al., 2006) and the affective and social relationships between individuals (Macdonald, 2002; Guldberg & Pilkington, 2006).

Through a focus on the above aspects, socio-cultural and activity theory can potentially provide a useful toolkit for analysing the data in a holistic way, situating understanding of the discussions within a context, and using this developing understanding of the context in which the students are located to inform the approach to the data. The activity triangle therefore guides analysis towards investigation of interaction, division of labour and the relation between content and task, whilst social learning theory enables the analysis to stay rooted in the meanings constructed by students through their journey as students. The question of how these three components interact can therefore be addressed through analysing how the group constructs itself including how equitable and ethical rules concerning joint activity are managed; ways of managing relationships between members of the community to ensure the community remains welcoming to new participants; a shared language or repertoire (or at least enough common ground to develop one); and facilitation roles that reflect the focus of activity and make adjustment toward common goals.

The first phase of this part of the research (chapter seven) therefore focuses upon the development of the activity set as a social entity constructed round a community of practice. This chapter aims to answer the question as to whether a community of practice is developing, including evidence of tensions inherent in

belonging to boundary communities of practice. In the second phase of the research, I use the analysis of online discussions to understand more about how the community gradually develops through interaction between the students themselves and in particular how individual students might impact on the creation of community including what it means to be a member through communication with one another, taking on different roles and acting on the task in different ways. I thus explore how the students move from peripheral membership to assembling ideas about community values and what it means to be a member. The chapter therefore focuses on peer-to-peer interaction and explores in particular the role of relational agency in the construction of community (Edwards & D'Arcy, 2004). This includes how online discussions develop students' capacity to reflect upon and develop their own practice; how students talk about how their practice and care has been affected by their study on the programme of study; how disagreements are resolved to generate new shared values and how students narrate with one another. The chapter explores whether the concept of legitimate peripheral participation is a useful lens for understanding this community by examining how individuals establish themselves and develop a distinct identity through their 'presence' in online discussion including how they move from peripheral membership to assembling ideas about community values and what it means to be a member (Lave & Wenger, 1991). It explores how students articulate common understandings or differences in conceptions of good autism practice and care and how this relates to the wider field.

The third phase uses activity theory to guide exploration of roles and division of labour within the community but this time focusing in on the extent to which the role of the tutor and the wider learning and teaching resources impact on the creation of a productive community. This includes investigation of how online discussions and the activity of the community are influenced by the selection of the topic of discussion (the discussion question) and by the interventions of the tutor within the online discussion. Jones et al. (2006) state that human-to-human connectivity is in the foreground of the definition of networked learning and that the role of the tutor remains critical in our conception of networked learning (Jones et al., 2006). A key concern in enabling learning to take place is therefore the balance between teacher and student participation. In this part of the research, I therefore focus upon the selection of a topic of discussion by the tutor and how this influences the quality of the discussion and the interventions of the tutor within the online discussion. The aim is also to understand why some online discussions 'take off'' in terms of numbers of postings and quality of engagement whilst others are less successful.

These above three phases are framed within a broader interest in how students engage with one another online including developing a language of practice and an interest in whether specific discourse features and structural patterns seem to result in learners' more effective or successful attainment of learning outcomes, including the development of reflexivity. The three phases are by no means presented in order of importance and although they represent separate empirical investigations, it is recognised that they all inform and interact

with one another. Thus the role of the teacher and the nature of the question interacts, impacts and interrelates with the way that students communicate with one another and an overview of all these areas of the research is presented in the final chapter, which is a meta analysis chapter.

6.5. Methodology

The above section has highlighted how the theoretical frameworks have guided the focus for this part of the research. The task is now to describe the methods and tools chosen to meet the above aims, recognising that there has been considerable debate about which are most appropriate for the analysis of asynchronous discussions as researchers have taken a variety of approaches to the study of bulletin board discussion (e.g. De Laat & Lally, 2003). As Garrison and Anderson (2003) identify, research designs vary from being descriptive and experimental to studying manifest (residing in surface of content and relating to observable phenomena) or latent content (the overriding concern is whether higher order thinking can be said to be generated). Poscente (2002) argues that analysis of text-based communication can be about finding an approach for both empirically measuring social interaction and critical thinking in those discussions and thus taking into account both content or 'subject specific' and affective matters. Whilst an approach that captures both those aspects is crucial for this particular study, the aims outlined above also highlight the need to capture the temporal dimensions of knowledge construction over time in order to understand the construction of community (Ekeblad, 1998; Mercer & Littleton, 2007).

A useful starting point is therefore to combine conceptual tools that enable the study of meaning with interaction analysis that examines collaborative learning outcomes (Kneser et al. 2001; Guldberg & Pilkington, 2006). This entails using methods that should enable analysis of both interaction and content combined with examining numerical data when appropriate for the question in hand. The section below describes the approach taken to discourse analysis in this research, starting with outlining the approach taken to interaction analysis and then highlighting how this combines with content analysis in order to give as rich an exploration of the learning environment as possible.

Given that research studying the processes of discussion more generally has concluded that the quality of discussion outcomes is related to the kinds of discourse techniques in which participants engage, it made sense to use methods that could test this proposition in relation to this research. The paragraphs below explore the background to decisions about choice of methods. Edwards and Mercer's studies (1987) which were undertaken in primary schools, focused upon the relationship between different elements of discourse. These included the structure (moves, patterns of exchanges), its controls (cues, turns, rules), its intended meaning (what kind of thinking was the teacher trying to foster) and the understanding which different types of discourse create. Edwards and Mercer (1987) found teachers use direct elicitations and cued elicitations to elicit knowledge. In responding they used confirmations, rejections, repetitions, elaborations, and reformulations.

In contrast, pupil talk in teacher free discussions was often found to be disputational, cumulative and exploratory. Mercer, Wegerif and Dawes (1999) went on to explore these three types of talk further. 'Cumulative' talk is characterised by polite agreement or acceptance of all suggestions. It can result in a lack of focus or direction with participants failing to make decisions due to the fact they do not evaluate alternative suggestions. In contrast 'disputative' talk can make equally poor progress as participants have a tendency to dismiss each other's suggestions without examining them critically. Barnes' focus on how pupils generated knowledge whilst negotiating and maintaining their relationships with one another, through their interaction, found that exploratory talk is dependent on the degree of knowledge that pupils feel themselves to have and also on their willingness to tolerate disagreements and avoid premature closures of discussion (Barnes, 1976; Barnes & Todd, 1977). Mercer, Wegerif and Dawes (1999) build on this work to identify 'exploratory' talk as the most productive in that participants offer reasons for their own propositions, welcome alternative suggestions and ask others for justifications. This is seen as resulting in deeper and more focused engagement.

The above approach of focusing on structure, its controls, its intended meaning and the understanding that different types of discourse create, gave a starting point for deciding on discourse analysis methods to use for this study. In order to develop understanding of both meanings invested and the form of the discourse, I felt that an approach that combined exchange structure analysis with qualitative research would be a good starting point for undertaking research that

would lead to as holistic an understanding as possible of the online discussions of WebAutism students. The first aspect relates to exchange structures and how these might impact on dialogue and I explain this before moving on to explain the qualitative approach.

In dealing with the question of dialogue analysis and developing quick and cost effective mechanisms for this, Kneser et al. (2001) developed the Exchange Structure Analysis (ESA) tool. It was developed to aim for a quick and effective yet reliable method for developing dialogue analysis at different levels. Their Exchange Structure Analysis tool is an adaptation of a previous tool developed by Pilkington (1999) entitled DISCOUNT. It is based upon Sinclair and Coulthard's transactional analysis (1992) taking notes of adaptations recommended by Stubbs (1983). The qualitative analysis of the data through ESA involves identifying for each discussion whether the message is initiating a 'new' thread of conversation or is offered as a response to an ongoing thread and whether within the body of the message a 'reinitiating' discourse move is contained, these being classified as either a clarification question or a challenge. Challenges include 'yes, but' or 'no, because' style responses or 'why?' style questions. Responses that also go on to raise new initiating inquiries are also marked. Based on previous work in the field (Kneser, Pilkington & Treasure-Jones, 2001; Pilkington & Walker, 2003) it is suggested that re-initiating (in which participant A is responded to by B who includes a reinitiating move such as a clarification question or challenge within the body of their message that A then replies to) is indicative of both exploratory style talk (the expression of alternative

viewpoints) and deeper engagement with each other's contributions. For this reason reinitiating sequences are examined to see if there was any evidence of greater progress towards learning goals in sections containing these sequences. The ESA tool can therefore potentially be a powerful tool for examining collaborative learning and the development of community over time whilst potentially also capturing ways of identifying how interaction patterns might give clear indication of the type of learning taking place, the nature of the discussion, and whether certain patterns show greater engagement with one another's experiences, or greater opportunity for learning from one another's experiences.

In implementing this tool, we need to take note of Henri's (1991) point that we cannot rely on message threading (use of the reply function) to determine which messages relate to other messages. For each phase of the research described here, each complete message was chosen as the individual unit of analysis as this enabled objective identification of units and clarified the number of observed units for analysis purposes. This is also in keeping with the 'unit 'as defined by the author of the message (Schellens & Valcke, 2006). However, this needs to recognise the complexity of the exchange structure itself. It is not always straightforward to determine the threading of messages purely syntactically according to whether the participant used the 'reply to' function of the web-based discussion tool. In many cases participants reply to the last message in the sequence but indicate in the body of their message that the response is actually to another message by marking the response with the name of the sender of the message to which their message is a reply. Sometimes

participants do not do this explicitly but the subject content makes it clear that the response is related to another message rather than the one replied to (this is recoverable through rules of anaphoric reference). Where this is clear the analysis records the alternative threading but where this is unclear or where messages are addressed to 'all' or 'everyone' e.g. opening with 'Hi all' whilst continuing the theme of the previous message, the threading as recorded by WebCT is maintained. Occasionally the message although threaded as a reply by the system is clearly a 'new' initiate on a 'new' subject and this may be recorded at the same level of the last new subject branch.

6.6. Qualitative analysis and emergent themes

In this research, the above approach is combined with qualitative analysis that explores the meanings invested in the community, and the values, outlooks and perspectives that influence how the students appropriate the discourse of the community. This is achieved by undertaking methods that approach the data in a semi open-ended way, investigating themes that arise from the data and that are of interest given the theoretical perspectives. This entails using a flexible approach that views the organisation of the data and its analysis as emergent within this framework. In coding the data for each phase of the research, units of analysis were grouped according to coding families that transpired from the data. I started with open coding, entering at the level of the individual bulletin board posting. The text was read with the view to reflecting on what was going on and by undertaking close reading of the postings. I kept track of my understanding through writing reflective notes whilst reading the data. I noted down impressions

that arose from the discussions at first reading of the material, including my own subjective reading of the discussions. Each Time-to-talk discussion was read separately and narrative summaries were written. I then developed a set of codes from the narrative summaries and subsequent reflection. The extract below gives an example of a narrative summary.

> *First impressions include that strong supportive relationships had already started to develop between participants. The tone of the discussion is characterised by trust and openness with students being polite and respectful towards each other. There is a culture of students making it clear who they are responding to and personalising the discussion by using someone's name before making their points. Students are polite to one another with most people agreeing with each other and then explicitly stating that agreement. Whilst students acknowledge each other and show warmth and support for each other in their interaction, I note there is little evidence at this stage of critical discussion of course material.*

Further reading revealed the major themes or categories that typified the discussion. The data was incorporated into NVivo software and this was used to aid the organisation, management and understanding of the text data. In the process of coding data, a value or 'code' was assigned to a section of text. The NVivo software enabled me to analyse the data in depth, to revisit themes and issues, to look for new emerging themes or patterns that had not been previously identified and to look for possible patterns, relationships and differences between themes. After having written narrative summaries focusing on initial impressions, my organisation of the data in NVivo enabled me to highlight key themes that arose from the data and that were of interest in relation to the theoretical framework. This aspect of the research enabled the research to move from

inductive to deductive thinking and back again, beginning with the whole and then focusing on particular areas of interest identified by the analysis of the data and by my original questions. I thus learnt something from grounded theory in terms of my strategic orientation to the data (Strauss and Corbin, 1990). By using a combination of exchange structure analysis and a thematic, emerging content analysis, there was potential to explore the question of whether form follows function at all and whether there are certain rhetorical or lexical forms we should look out for when analysing online discussion. This approach to the data had the additional benefit of enabling analysis that might be able to pick up on the unexpected as well as the routine.

In addition, this two-pronged approach of focusing on both content and collaborative learning outcomes was combined with using some simple quantitative approaches when this was appropriate. As Mason (1991) suggests, much useful information can be gained from some simple quantitative approaches such as counting the number of posts or the proportion of posts by each participant. Other techniques include using box plots to show participation by segment of the discourse. This can be combined with the analysis described above that requires a much more detailed, qualitative and content-based approach, which is a time-consuming task (Henri, 1991).

In the three phases of the research, I approach each phase of the data analysis using a combination of these approaches in an iterative approach that allows flexibility so that findings from one approach can lead to further exploration by examining the data in a different way. An example of this is the

discovery in chapter eight that there are some key distribution patterns across three groups in which two or three people dominate the discussions in terms of quantities of postings. This lead to further investigation of how these students interacted in the discussions and whether this dominance encouraged or constrained other students. Analysis of these issues was undertaken through a combination of examining interaction patterns and undertaking qualitative analysis of the interventions of three key individuals. Another example relates to the approach in chapter nine, when I start by examining quantities of postings, and whether certain questions attracted more posts than others. Findings from this lead me to investigate whether there was a correlation between word length and numbers of posts, thereby enabling developmental triangulation. Data from this was then situated within an analysis of interaction patterns and qualitative analysis of content.

The flexibility of approach is highlighted through how I employ the different methods through the three phases. In phase one (chapter seven), I use Exchange Structure Analysis (ESA) coupled with a coding scheme based upon key concepts from the community of practice framework. Here Wenger's (1998) 'communities of practice' is used as a theoretical framework for establishing how students develop a learning community based upon mutual engagement, joint enterprise and shared repertoires (Lave & Wenger, 1999), with these three aspects being analysed according to two measures. The first focuses on learner appropriation of the professional discourse, values and goals of the ASD carer through the network. The second relates to changes in the quality of collaborative

activity over time. I therefore looked for sequences in which, in line with good practice in ASD guidelines, there was evidence of: awareness of alternative approaches to care; empathy with the person with an ASD and planning to meet their needs through taking their perceptions into account and planning with multi-agency co-operative working in mind. Alongside these indicators the adoption of specific lexical items (terms) were also thought to suggest learning to adopt the repertoires of the ASD practitioner. The analysis therefore explores how students progress through the discussions looking for evidence of developing as a learning community with emerging common values and goals and ways of supporting each other in changing practice.

The methods for phase two (chapter eight) combines quantitative analysis of discourse patterns with qualitative analysis of one key individual in each of the three groups studied. The first stage collates data about posting distributions in the asynchronous discussions of the three separate online tutorial groups. This consisted of a process of collating data about how many postings each individual has posted and comparing that with the number of postings of all other individuals in the group. This provided a framework for answering questions about whether certain people post more messages than others and a basis for exploring what the distribution patterns of postings can tell us about dynamics that might be developing in the online discussions. It includes gaining a sense of whether there is an even balance of postings between individuals, whether most students joined in, to what extent they joined in and whether certain students regularly posted more than others. This analysis of quantitative data steered the

research towards qualitative analysis that examines how parents and practitioners conduct dialogue with one another in the discussions. The qualitative and emergent framework focuses on the postings of three individual students and the qualitative analysis is triangulated with analysis of interaction patterns and numerical data on key areas of interest, thereby enabling methodological triangulation.

In phase three (chapter nine), a sample of bulletin board discussions are chosen from three different groups with the view to again combining quantitative and qualitative analysis of the data. As in the analysis in phase one, ESA, as developed by Kneser et al (2001) as an adaptation of Sinclair and Coulthard's work (1992) is applied. In continuing to look for indicators of deeper engagement as described above, the previous coding instrument was adapted further by coding all the postings according to whether the post was best described as a descriptive monologue, a response to a previous posting, or a re-initiating turn thereby enabling us to focus on the distribution of different types of discourse. The issue of determining the impact that the type of discussion topic or question was measured in two ways: firstly according to the quantity of postings generated for each question across all groups and secondly according to the distribution of the type of postings generated by each question across the three groups. In terms of examining the role of the tutor, all postings from tutors were collated and analysed in detail according to the themes of welcoming and affirming, instructing and modelling behaviour, intervening when necessary, and challenging and

giving feedback. Having described the methods used for the different phases of the research, the next section explains the sampling decisions.

6.7. Sampling

Given the high number of students on the programme, each geographical tutor group is combined with another geographical tutor group to form one online group of between fifteen and twenty students. There is a vast amount of discussion material for the cohort as a whole. In fact, over the year, there was a total of ten thousand seven hundred and nine postings through Time-to-talk alone across all groups. The total number of messages posted by the mode group was three hundred and seven whilst the lowest posting group posted two hundred and seventy-nine and the highest posting group posted five hundred and ninety-two over the time period. Given an average word count of two hundred and one words per post, it is clear that this represents a large volume of data. The volume of postings therefore prohibited a detailed qualitative analysis of all the tutorial groups.

In terms of sampling, the decision was made to focus on one online group in this first phase of the research. A sample of discussions from the mode (in terms of numbers of postings) group was therefore selected for further detailed qualitative analysis. The sample consisted of six Time-to-talk discussions (discussions one, four, seven, ten, thirteen and seventeen) each approximately three weeks apart. It was hoped that this would provide ‘snapshots’ that would be suggestive of development over time. Each of these was analysed as a complete discussion. The induction week postings were also selected as potentially

important in exchanging information as students 'got to know each other' through the medium of online communication. This gave a selection of Time-to-talks over a time period of seven months in total.

For the second phase of the research, previous analysis is extended to compare data from the mode group with data from the lowest and highest posting groups as this phase of the research was also concerned with comparison between groups and with analysis of dynamics within groups. This included the group with the lowest number of postings in the time period, the group with the highest quantity of postings in that period and the group with the modal number of postings. For ease of reference and for clarity, we shall call these Group L, M and H. L is the lowest posting group, M the modal group and H the highest posting group. There are seventeen students in group L, fifteen students in group M and eighteen students in group H.

Once data from these groups were collated, the total word count for each group ranged between ninety-eight thousand for the lowest (L) posting group to two hundred and fifty-eight thousand for the highest (H) posting group so further sampling was necessary in order to be able to conduct qualitative analysis. The development of learning and identity over time was of interest here so the decision was made to select a set of discussions that took place over a period of six months again, with the same amount of time between each discussion. The sample for this research consisted of six separate bulletin board discussions over a period of six months in the three different online groups, resulting in a total of eighteen bulletin board discussions. To give a sense of the size of the total

sample it amounted to a total of four hundred and eight bulletin board postings, with a corpus of seventy thousand four hundred and twenty-two words. Group L had seventy-eight postings in total, group M had one hundred and thirty-five postings and group H had one hundred and ninety-five postings. Each discussion took place with three weeks between each other and those particular discussions were analysed in their totality. It is worth stressing here that although tutorial groups discuss the same content in their bulletin board discussions the different groups do not have access to one another's discussions.

6.8. Reliability

In transcript research the primary test for reliability is often inter-rater reliability and the extent to which different coders come to the same coding decisions with the simplest method of reporting being that of the percent agreement statistic. Reliability is often directly affected by lack of discriminant capability. If categories are not clear then discrepancies in coding will occur. In a system with a large number of coding categories (e.g. there are around 100 predicates at the lowest or most detailed level of coding category in the DISCOUNT scheme, Pilkington, 1999) it can be difficult to create reliability because there is greater possibility for chance mismatch whilst a system with too few categories can become victim to chance alone (Kneser et al., 2001). Thus, Carletta (1996) notes that the popular method of calculating the percentage of pair-wise agreement can give a misleading figure for the reliability of the scheme when compared with schemes having different numbers of coding categories.

The alternative method of calculating agreement using the Kappa statistic attempts to take into account the number of categories so that the reliability of alternative schemes can be more fairly compared. In relation to the ESA interaction tool, it is worth making the point here that this was created as an adaptation to one of the six levels of coding in the DISCOUNT scheme. The authors re-defined the categories of analysis in this transactional (exchange structure) level to include only five categories in an effort to reduce ambiguity and entitled analysis at this level ESA (Kneser et al., 2001). The inter-rater agreeability was tested through an analysis of a Chat seminar, arriving at a Kappa of 0.71, which is considered to fall within an area in which tentative conclusions can be drawn (Krippendorf, 1980). Further details of what is coded and how this occurs is covered in each of the specific empirical chapters (chapters seven, eight and nine).

The ESA has therefore already been tested with the tentative conclusions aspect being noted. Furthermore, the analysis of the data for chapters eight and nine in this research was conducted in partnership with my supervisor, Dr Rachel Pilkington, and we arrived at a consensus approach. Dr Pilkington and I implemented the coding framework together with frequent meetings to check the reliability of the coding scheme and to explore the issues that were arising from the data. In addition to this, the triangulation of different methods should strengthen the credibility of findings in this research.

6.9. Summary

This chapter explained how the process of analysing online discussions

evolved in this study. After outlining a contextual background to current research in the field of online dialogue, I explained how the theoretical frameworks of the research informed decisions about which aspects of online dialogue to focus on, through three phases of empirical investigation. This methodology is rooted in the theoretical perspectives of the study and focuses primarily on roles, tools and tasks. This structures the empirical analysis in chapters seven, eight and nine and guides analysis to focus on the roles of students and tutors in more detail, on the tool of online dialogue and on the tasks in terms of the questions posed. The chapter therefore provided methodological clarification for the approach taken to discourse analysis. This approach combined detailed content analysis with a focus on interaction patterns through exchange structure analysis.

CHAPTER SEVEN: THE MICRO LEVEL: COMMUNITY

7.1. Introduction

As outlined in the last chapter, this is the first empirical chapter focusing on the micro level, in which understandings about this level are generated through analysis of online bulletin board discussions. This chapter is concerned with how students develop as a learning community through the online communication medium entitled Time-to-talk, as described in chapter five, and to what extent this type of collaborative activity contributes to the creation of a community of practice. The chapter explores whether dialogue in this context enables the development of community and it draws heavily upon Lave and Wenger's work on communities of practice. Thus, if a community is a learning community we might expect evidence of progress toward ways of talking that themselves can become mediating artefacts for transformation (Lave & Wenger, 1991; 1999). A learning community thus suggests a shared commitment toward co-construction of knowledge (Garrison & Anderson, 2003; Mercer, 1995; Wenger, 1998). Previous chapters have highlighted that in this study, the approach to researching student learning is based upon trying to identify dimensions of productive learning (Jones et al., 2006; Wenger, 1998), including meaningful learning, learning through engagement and participation, and effective adaptation of knowledge and identity. The analytical focus in this study is therefore on what the WebAutism case can tell us about learners' experiences, perceptions, and

interpretations of productive learning from participating in the learning environment.

7.2. Context and background

A networked community uses the Internet to establish collaboration across geographical barriers and time zones. Networked communities generally exist according to identification with an idea or task rather than a place. They can sometimes be fluid without formal boundaries but also often exist within more structured and closed learning contexts such as this one. They constitute communities because learners participate in activities that enable learning to take place (Henri & Pudelko 2003). Henri and Pudelko (2003) put forward a theoretical framework for the study of networked communities. They argue that this framework needs to be based upon the negotiation of meaning as a precondition for learning. It should also describe the learning performed in terms of the participation process. Their paper identifies four types of community: the community of interest; the goal-oriented community of interest; the learner community and the community of practice.

Perspectives on learning communities derive from several different socio-cultural perspectives and the study of discourse (Engeström, 1987; Vygotsky, 1978; Mercer, 1995; Wenger, 1998; Cole & Wertsch, 1996; Lave & Wenger, 1991, Bakhtin, 1981). Some have looked at the concept of a discourse community (Swales, 1990) and the defining characteristics of such communities. Others (Lave & Wenger, 1999) have looked at what might be meant by communities of practice. Swales (1990, p. 24-27) defines a discourse community

as having the following characteristics: a threshold level of members with a suitable degree of relevant content and discourse expertise; a broadly agreed set of common goals; mechanisms of inter-communication among its members which it uses to provide information and feedback and one or more genres with some specific lexis that is used to further its aims. Groups of learners who work together in a community of practice are defined as groups of people who interact with one another regularly through sharing concerns, passions about a topic or a set of problems (Wenger, 1998).

Common to both is the suggestion that a community should evidence mutual engagement, joint enterprise toward shared goals and shared repertoires or mechanisms for inter-communication (Lave & Wenger, 1999). Mutual engagement entails working toward the same goal or goals and requires constant attention to coordinate action. In this 'doing together', there is room for conflict and diversity. However**,** joint enterprise entails continual negotiation among members of the community and mutual accountability. In these processes members of the community invent, adapt, adopt or construct a shared repertoire. This could include shared language, ways of doing, tools, concepts or other shared resources. Others suggest the most important aspects of community are based upon mutual interdependence among members, a sense of belonging, connectedness, spirit, trust, interactivity, common expectations, shared values and goals and overlapping histories among members (Rovai, 2002). A notion of community also assumes that members have different

interests, make diverse contributions to activity and hold varied viewpoints. Participation at multiple levels is entailed.

Adults studying online have the potential for simultaneous memberships of both online and workplace communities of practice. In fact, many adult learners in online communities are also workers in enterprises who are studying knowledge that can be expected to have some relevance to their professional lives (Stacey et al., 2004). As we have seen from previous chapters, the students in this study all have something in common in that they work with or care for people with ASD. They belong to an overarching community of practice before joining the programme and start the programme already belonging to overlapping boundary communities that have a lot in common with the discourse community they form. The key question for this stage of the research is whether WebAutism participants form a community according to definitions of community discussed above (Lave & Wenger, 1991; Swales, 1990). Membership of the learning community is formally defined by registration on the program but to be a learning community this should not be all that binds members together. Participants are to some degree committed (through registration on WebAutism) to obtaining a qualification. In order to also be a community of practice, members need to negotiate joint activity towards shared understandings and goals and to use the network as a resource to achieve these both within the learning community and in the boundary communities of practice to which they belong. Moreover, membership should be acknowledged by participants as forming an element, however minor, in defining their identities as practitioners and carers. The

sections below describe the findings from this analysis according to the parameters above.

As stated above, the data is approached through the lens of Lave and Wenger's notion of communities of practice, defined by mutual engagement, joint enterprise and shared repertoire of actions (Lave & Wenger 1991). Two measures were considered important in analysing the data according to the above. The first related to learner appropriation of the professional discourse, values and goals of the ASD carer (one measure of learning to be a practitioner in this context). Qualitative analysis of the data (as described in chapter six) was undertaken to explore this aspect. The second aspect related to collaborative engagement with each other's contributions (another aspect of learning to be a practitioner in this context). For this aspect of the analysis, ESA was used as a coding system for analysing the data (in line with explanation given in chapter six). The analysis judged progress towards learning goals according to those two measures. The findings are divided into four sections; the first three sections examine the extent to which a community of practice is developing through mutual engagement, joint enterprise and shared repertoire of actions. The fourth section explores collaborative engagement with each other's contributions.

7.3. Findings: Mutual engagement

This first section on findings explores how students progress through the discussions looking for evidence of developing as a learning community with emerging common values and goals and ways of supporting each other in changing practice. Looking at discussion in the induction week of the course (i.e.

prior to any Time-to-talk task) it is possible to gain evidence of pre-existing shared boundary communities within which participants are engaged. As the extract (figure thirteen) illustrates, within the main body of the discussion there is evidence of students working to establish identity through exchange of information concerning membership of geographical locations, relationships and communities outside the learning community. From the induction chat, two clear overlapping subsets within the learning community are identified (practitioners and parents) and a range of different working and caring roles are established.

Figure 13: Establishing inter-relationships, common geographical locations and roles in induction chat. Later, a subset of parents emerges.

7	EI	*Hi VD, My name is EI I live in Hapsby West Moppex and work in an SLD school in Coldsmith. Where about are you?*	Reinitiate
8	VD	*Hi EI, I work at an SLD school in Capston and live just outside Coldsmith. So not too far from you!*	Response
9	EI	*Hi VD, Do you mean Squarefield? I know some of the people who work there. Do you know CM the SALTA? We used to work together a few years ago.*	Reinitiate
23	CC	*Hi MO, it's CC again! My son John has just informed me that he thinks you may have a son called Tom in his year at Ashington? CC*	Initiate-Inquiry
35	CC	*Hi MO, If I can go to the tutorial and you could get up to my school I could give you a lift and then take you home afterwards. CC*	Response

In the particular discussions analysed in this study, the general tone of all the discussions are characterised by trust and openness. There is a culture of students making it clear whom they are responding to and personalising the discussion by using someone's name before making their points:

I thought you put it very well Maria; Katherine I totally agree; Hi Joanne, You've pretty much summed it up; Hi Helen –It makes things so much easier…

From the induction chat onwards there was evidence of tutors and students modelling a supportive environment in which experiences could be shared safely. In this sense the learning community really 'hit the ground running' and this may in part be due to the fact that they found common ground they could 'identify' with easily in the induction chat. There were also many instances of participants reassuring and encouraging each other in operating within the learning community but also beyond its boundaries (see figure fourteen).

Figure 14: Fellow students offer each other encouragement and support in their roles outside the community.

8	EI	*Thank you L for your reply. It sounds like you do a very valuable job in supporting parents through receiving a diagnosis. We don't have anything like that level of support for our families in this area. It must help them enormously to have people like you around. We seem to have such waiting lists in this area I was concerned that parents would be given a diagnosis and then left without any support. I cannot imagine how hard having to wait for a diagnosis must be for parents when you know that things are not as they should be. Thanks, EI.*	Initiate
51	CC	*Hi OE, Where are you based? I was going to fund my course but I was made aware of other places to apply for funding. Do you have a school effectiveness service in your area? I applied to ours and have a very good chance of getting funding. My line manager has not mentioned this to me I don't even know if he knows about it. Your local LEA might be able to advise you. Two of our teaching assistants are doing NVQs and have been totally funded by the LEA. It's always worth a try, they can only say no at the end of the day, CC.*	Initiate

The role of the tutor in monitoring the chat is also likely to be important. In the induction chat the tutor welcomes everyone immediately after his or her first

introductory input. In addition when participants expressed nervousness in using the chat for the first time the tutor was supportive and reassuring.

Figure 15: One of the tutors offers reassurance in the induction Time to Talk and another summarises the first discussion.

55	CO	*Hi O, well done on getting here and welcome! Don't forget we have people at this end that can help you with technical problems. They have lots of handy fact sheets - every year lots of students have different technical problems and so they can often resolve problems very quickly with the knowledge they have. There is a link on the homepage for TechAutism. I'm sorry that your tutor hasn't arrived yet; we're working on this as fast as we can. In the meantime could you go into PG's tutor messages area and post a message giving the best times/places for you for your first tutorial. Your tutor, LU, should be in touch soon.*	Response
59	PD	*I enjoyed following your discussion around the issue of diagnosis. It seems that all of you, from either personal or professional perspective, see diagnosis as a positive starting point to developing understanding and awareness both for parents and professionals. The examples you gave about the change of attitudes and perspectives after the diagnosis (from "that child" or "the child with behavioural problems" to the "child who needs understanding and support") are very illustrative and reflect your own experience as parents/professionals. Many of you also drew attention to the importance of early diagnosis and intervention. Some concern was expressed that the amount of support available to the child and parents depends on the 'geographical location'. Some of you raised a very important issue of necessity of training. Very often staff in mainstream schools lack knowledge and experience of meeting needs of children with ASD. I liked the way quite a few of you came back to the points to clarify the issue. It was good to see you responding to each other's comments – this is an important aspect of the Time-to-Talk discussions. This Summary indicates that the topic is closed and it is time to move on to the next discussion, Good luck, PD.*	Initiate

7.4. Findings: Joint enterprise, shared repertoires and values

As participants began to engage with some of the subject matter they began to disclose experiences as parents or practitioners, which aroused strong emotions in the group. Parents, in particular, shared some of their frustrations and difficulties (see figure sixteen).

Figure 16: Parents share experience around the importance of diagnosis in Time to Talk 1.

2	CC	*From a parent's point of view I think diagnosis is essential to ensure children receive the right help from the various agencies. Diagnosis also brings understanding. Due to my own son not being diagnosed till 19 years of age he was totally misunderstood by friends, family and school and virtually became an outcast. We have literally been to hell and back. It is only since his diagnosis that we have, as a family begun to come to terms with things and been able to attempt to access what little help is available. I am determined to get myself qualified to help and support others in similar situations. My son has also had his world opened up beyond belief.*	Initiate
5	RI	*CC, I feel so sorry for your situation, it is so unfair. My son is a high functioning autistic and he was diagnosed when he was 4 years old, and therefore got a statement immediately. Along with the diagnosis and the 'autistic label' came the special school with wonderful special needs teachers, speech therapists, specialist doctors etc that he wouldn't have been entitled to without the diagnosis. But more importantly, we had a reason why our lives had turned into such a nightmare, and because we had the word 'autism' we could find books on the subject and other people going through the same and often worse times than us. I hope things are improving for you now*.	Response

There is evidence of increasing empathy with the person with an ASD through sharing alternative viewpoints (as parents or practitioners) and through

tasks that encourage students to put themselves in the place of the person with an ASD. Increased empathy is one of the goals of the course and so evidence of its development may be equated in part with learning to be a practitioner. A deeper understanding of what it was like to be a person with an ASD was further evidenced through participation in a later task. Here practitioners and parents gained new insights as they reflected through observation upon what it would be like to fail to appreciate the non-verbal channel of communication (see figure seventeen).

Figure 17: Students discuss what it may feel like to be a person with an ASD through observing non-verbal communication in Time to Talk four.

10	CC	*I watched my sister very closely while we were chatting; it was amazing how many different methods of communication she used. Hand gestures, nodding and shaking of her head, eye contact and eye direction, verbal, tone of voice, and lots of noises that I understood as agreement to what I was saying and encouraging me to continue. I also noticed that we were chatting whilst watching TV and looking at photos. What a nightmare scenario for someone on the autistic spectrum!!!!!! CC*	Initiate
14	NI	*Hi all I observed a group of women at lunch break in a training session… I wasn't close enough to hear the conversation, just the general tone and the odd word, but the fact that everyone seemed in accord with getting up and tidying away struck me as being a situation that could throw someone with ASD who would need a warning or at the very least some signal that it was going to happen. The whole situation would be a minefield, and very unpredictable.*	Initiate

In terms of appropriation of the professional discourse of the ASD carer, this is already to some extent in place. Early discussions show that specialist lexical items indicative of practitioner discourse include reference to a number of acronyms without further explanation in the expectation that others understand

these. These include SALT (Speech and Language Therapist), ASD (Autistic Spectrum Disorder), SLD (Severe Learning Difficulties), AS (Asperger Syndrome) and T.A. (Teaching Assistant).

The community also develops common values and goals. Consensus is quickly arrived at on the question of whether it takes a certain kind of person to be able to work with people with ASD. Here we see the learning community defining its identity through reference to an 'out-group' of staff in their workplaces who have not developed the awareness of good practice which they now share (see figure eighteen).

Figure 18: Arriving at consensus and defining the values of the group in relation to others in the workplace.

9	OE	*Hi everyone I have to say due to a recent situation that occurred in my school I would have to agree that it takes a certain type of person to work in the field of ASD. We recently had a T.A. placed in our room who just couldn't work in there. In other classes she was professional and had some good relationships formed. However when she came into my class she seemed like a different person, she had no training in ASD and did not understand their needs. She would shout, causing stress to everyone. Unfortunately this led to a very difficult situation and she ended up resigning. OE.*	Initiate
10	CC	*Hi OE, I have also experienced staff who do not understand people with autism and try to force them to do things and behave in a certain way. When the child is unable to comply they are labelled naughty or difficult, which is totally untrue and causes a lot of unnecessary stress for the child concerned. It makes me really angry when I hear these staff members complaining about these children in the staff room. They refuse to believe that the child is not behaving like this on purpose. They do not have the understanding or patience needed to work effectively with people with autism. CC.*	Response

In the discussion, a shared sense of vocation and notions of what make them as a group 'special' comes across through the dialogue. In the field of ASD, people often talk about being 'bitten by the bug,' having becoming fascinated by working with people with ASD and feeling a strong vocational commitment to continuing with this (Peeters & Jordan 1999). Furthermore, the discussions show shared assumptions about what students consider to be important attributes in someone who works with or cares for someone with an ASD:

> *I do believe staff need to have certain characteristics to work with people with ASD. It can't just be a job like any other. I think as Maria has said that you probably do need to be the sort of person who is intrigued rather than daunted or disconcerted by the challenges ASD individuals present.*
>
> *What is needed to make a 'qualitatively different' carer/practitioner is someone who is attracted to the fascinating world of autism, willing to learn about the condition and all of its complexities and have a flexibility in their style of communicating and interacting.*
>
> *We need to show commitment to learning more about autism as well as the skills needed to understand a person with autism.*
>
> *We need to be prepared for small steps in progression and realise that these may cause new problems. We need to show empathy and flexibility and create good partnerships with parents and other professionals and make sure that we put the person with autism at the centre.*
>
> *As a community children's nurse I spend a lot of my time listening to parents, carers and teachers as I try to bring together the different perspectives they bring to a child's situation.*

Students thus express a sense of a 'special identity'. There are similarities here with Lewis and Crisp's (2004) research into the SENCO forum. This open forum provides practitioners and parents with an opportunity to discuss issues that relate to support for pupils with Special Educational Needs (SEN) as well as

the development of ideas and practice in SEN provision. Lewis and Crisp (2004) found that the forum may be supporting a 'special' identity under threat and looked at how the forum enabled ways of sustaining this identity, even within an inclusive context. They highlight that the question of whether this identity helps or hinders inclusion is one worthy of further investigation.

7.5. Findings: Mutual interdependence

The learning community is now operating as a shared resource within which students can explore strategies for changing those workplaces in line with their values and goals. The common language between the students is 'practice' and 'experience' as students time and again relate back to those themes regardless of the question set. 'Practice', 'experience' and how to support the person with an ASD appears to be key in relation to how students connect with one another (see table seven).

Table 8: Numbers of different categories of statements

Statement	**Group H**	**Group M**	**Group L**
Statements that give descriptions of practice	61 out of 195 total	33 out of 135 total	26 out of 78 total

This is then followed by ownership of the network and a collective sense of moving forward. As the students develop their sense of group identity they potentially become a force for developing new ideas and challenging their institutions to change (see figure nineteen). As they progress through the discussions, students begin to develop new questions to explore for themselves. These questions challenge the nature of the workplaces in which they practice

and indicate the development of the network as a support outside these workplaces which may increasingly be in tension with them but perhaps a tension which can be 'held' in part through expression in the group enabling the practitioners to push those institutions gently toward ways of working more effectively whilst deriving a sense of not being in isolation from the group. Furthermore, the network shows evidence of helping students mediate relationships with boundary communities. Students realised the potential of the network for helping each other negotiate across boundary communities through the sharing of experience, information and expertise. One participant helps another parent make the transfer between primary and secondary school and manage new communication strategies. This practical exchange of suggestions might be just one of the reasons why students valued the network.

Figure 19: Generating new questions with which to challenge current practice in Time to Talk thirteen.

14	EI	*OE - sounds like you would like to settle for one approach instead of jumping around between different approaches. What intervention would you like to see implemented in its entirety?*	Reinitiate
19	OE	*One thing that has occurred to me when I have been reading and learning from this module and looking at my practice and others is are we really preparing our children for the real world. If they go to work in an office or wherever they are going to work how can we guarantee that there is not going to be a sound in the background they don't like, fluorescent lighting, distracting posters on walls or the structure they have got used to. Having good lighting no distractions etc may work in the classroom but what happens when all that has gone?*	Initiate

Participants also showed evidence of wishing to carry on their networked support after their study was finished. They expressed strong feelings about the value that they felt this notion of belonging to a community gave them, to the extent that they expressed anxiety about the possibility of this support mechanism disappearing once the programme of study was finished. The students contacted the team, asking them to set up a bulletin board facility for them after the programme was finished. The course team did not have the resources for this and suggested they could communicate through MSN messenger. The students set up their own area for communicating as a result of this. Some students are now using both the general programme bulletin board and their own network to write a book together. In order to develop further understandings about how the community becomes a supportive network of a community of practice, we need to understand more about how students engage with one another's contributions and how the nature of this collaborative engagement changes as they progress through the course and this is explored in the section below.

7.6. Findings: collaborative engagements with each other's contributions

From the quantitative data analysis of all thirteen tutor groups a very definite pattern emerged from all groups such that the quantity of postings decreased between modules one and two and decreased further between modules two and three of the programme. This decrease between modules one and three was more than fifty percent for four groups. This prompted questions as to why this pattern occurred and, in particular, whether the quality of interaction was different

for the different modules and whether this related to factors of group development over time, or to other group dynamic or task related factors. In particular, do students actually engage less with each other's contributions or as the quantity of postings declines does the quality of interaction with respect to the learning community goals stay the same or improve? Can any such changes be related to tensions between different communities or workplace related subsets within the tutorial group?

An early Time-to-talk task asked students to debate the importance of early diagnosis. This topic generated long reinitiating sequences, which has some of the flavour of contentious debate. After several participants agreed on the importance of early diagnosis an alternative viewpoint was raised and explored. Although it is difficult from the transcripts alone to be certain of the extent to which this contention is later resolved it would seem that whilst initially practitioners might have been more ambivalent about diagnosing very young children the strength of feeling from parents who favoured the earliest possible diagnosis leads the group as a whole towards that point of view. In other words, the taking of alternative viewpoints by identifiable subsets within the community in this instance produced a criticality in debate that may have led toward an intention to change wider institutional practice as a goal of the learning community as a whole (see figure twenty).

Figure 20: Contention and debate in Time-to-talk one.

40	EI	*Hi everyone Please, please do not think that this is my point of view but it seems that these are views held by some people still. I have been chatting with my teacher who is doing her MA and she recently met up with her group and they were discussing the value of diagnosis. She reported that in some areas children who where given a diagnosis of Aspergers were placed into the EBD school and not into the mainstream school system. This was mainly down the consultant who diagnosed the children. The teacher in the area felt the children would have been better off without a diagnosis and left in mainstream school where people accepted them as they were. Please, no offence to any of the parents on this course, but another view expressed was that some parents would see the label and not the child. I have experienced one parent who only lists what her child can't do because he has ASD rather than what he can do, which appears to be more than she has reported, at the moment. EI.*	Initiate
41	CC	*Hi EI, I was interested to read your message. Firstly, I wonder if parents always realise that they can appeal against decisions if they don't agree with them. Indeed do they realise that they can disagree. I think many people don't always feel equipped to voice their opinions strongly enough. Secondly, parents need to learn about the condition so they can support and empower their child. This takes time I know, but is well worth it. When I suspected my son had Asperger's syndrome I accessed as much information as I could and went armed with all my newfound knowledge and made people listen. Thirdly, think about this question that I ask people who are opposed to diagnosis or "labels". "If you suspected you had diabetes or epilepsy wouldn't you feel you needed to know" Yes, they are medical conditions and Asperger's may not be but you still need a diagnosis in order to obtain the specialist help and support you need in order to live life to the full. What does anyone else think? Am I making sense? CC.*	Reinitiate
42	RI	*CC, yes you are making sense, and I'm glad you made that point, and from what I've been reading this week autism is a biological defect and not just a behavioural issue. Behaviour is 'just this tip of the iceberg' is what I have read this week. A label isn't an excuse for the child to behave badly, it's a reason for carers to try and*	Response

		understand why and realise that the behaviour is just a consequence of brain damage (the frontal lobes apparently). RI.	

In later discussions the use of counter arguments is not seen to the same degree as in Time-to-talk one and reinitiating sequences are comparatively rare. From an analysis of these later dialogues it would appear that the nature of the task is an important factor in this and this issue is discussed further in chapter nine. Thus whilst Time-to-talk one task posed a classic debating style question – 'how important is early diagnosis?' Time-to-talk four set the students the task of observing a conversation and reporting on the importance of non-verbal communication in it. Two factors obviate against deep discussion in this task. Firstly the task does not ask a question the group can easily work toward consensus upon and, secondly, no one saw anyone else's conversation so no one could easily come to an alternative point of view concerning what actually occurred in it. Moreover, because this group's practitioner base is not in understanding non-verbal communication per se their prior knowledge in this area is relatively low (they do not have pre-formed critical ideas to debate). The result is not only low initiating but also low responding with a tendency towards individual monologue rather than dialogue. However before we dismiss this Time –to-talk as low in 'quality engagement' it is worth noting that many of the inputs suggest a deepening awareness of what it might be like to be a person with an ASD and since this is a central concern of the programme, it reminds us that individual tasks and the sharing of individual experience (without debate) can still provide powerful learning opportunities.

Similarly, Time-to-talk ten also has a lot of initial individual postings, which are not engaged with. In general the lack of contention on the issue discussed means the conversation quickly arrives at consensus and ends. In contrast Time-to-talk thirteen encouraged a lively debate concerning whether the eclectic approach was to be preferred over universal adoption of one particular approach to intervention. This topic had similar properties to the discussion on diagnosis. There was a clear question on which students were asked to express an opinion and could relate to their own experience based around set reading. However, unlike Time-to-talk ten there was sufficient contention in the reading material and the individuals' own approach to practice to spark debate. Time-to-talk seventeen asked students to summarise their practitioner role and, like Time-to-talk four this proved to be a task which individuals reported rather than debated. Although as a result of the explanation of different roles students did generate a side discussion on how best to engage parents in communication with teaching staff and some practical suggestions for change emerged that students suggested they might implement (see figure twenty-one). This might suggest that by this stage the group had developed a productive maturity such that when the task was not conducive to debate they would digress and debate other issues emerging serendipitously.

Figure 21: Participants help each other manage relationships between school and family in Time to Talk 17.

4	RI	*The 'home/school' diaries that O mentioned are a lifeline. As a parent on the other end, and living so far from the school, it was so important and the teachers/helpers sent home a message everyday, even though that must have been time consuming, but that was last year in primary school. This year in secondary school I don't get any messages or information and it is a worry. Perhaps they think that secondary school children should be more independent. I am forever sending in letters and faxes and emails, but he doesn't have just one teacher through the day, so I suppose it is different. RI.*	Response
6	NI	*Hi all I just want to ask R, has your secondary school given you a named person to contact to keep up to date with your son or daughter's progress? Some of our secondary schools are better than others at this. One school has appointed a teaching assistant to work specifically with students with ASD's and she speaks to the parents once a week by phone. Maybe this could be something your school could consider? NI.*	Reinitiate
7	RI	*Hi NI, Sorry it has taken so long for me to reply, it has been a mad week and I'm going off on holiday today - wish me luck! To reply to your message, my son started secondary school last September and so it was a whole new system to get used to, and when I didn't know any teachers I didn't really know whom to contact - so I became a governor! I know there must be an easier way to get to know the teachers and what is going on. I found when I was new, emails got overlooked and so did the little blue communications book, so I started sending faxes - this isn't always possible for other parents. I think I will ask the school if your idea of a named person, that*	Response

		people know they can contact at a certain time with problems, would work for them. Thanks for that. RI	

7.7. Discussion

There have been a number of studies using the theoretical perspectives of socio-cultural and activity theory in relation to online learning environments, including whether one can apply Wenger's (1998) social learning theory to 'virtual' or online communities (Ekeblad, 1998; Henri, 1993; McConnell, 2005). As has been outlined, this perspective sees participation in community life as a basis for learning and identity construction (Vygotsky 1978, Engestrom 1987; Wenger 1998). When applied to 'virtual communities' these are defined as social entities that gather through using information and communication technology (Henri & Pudelko 2003). These constitute communities because learners participate in activities that enable learning to take place (Henri & Pudelko 2003). One of the questions for this research related to whether online communities can play a socialisation role to the same extent as communities that are geographically located in a physical space and share values and outlook, something that is considered a defining part of a community (Rheingold 1993).

The data thus shows evidence that students belong to an overarching community of practice. This entails having an identity as a carer or practitioner in the field, which then impacts on their sense of belonging to this particular programme. Furthermore, students belong to different subsets and they work at sharing and co-constructing shared understanding through this. This group appeared to 'hit the ground running' through high overlap in participation in

boundary communities. Following this we saw evidence of a shift in focus from the interpersonal (resolving conflict between each other's positions) to the inter-community (resolving how to help each other operate within the workplace and ways of helping each other shift the workplaces' ways of operating toward the values of the learning community). The students have in many ways developed their own discourse and show a certain consensus of what constitutes a good practitioner as well as a shared set of values. They counter pose this with notions of 'the other'- people who do not have the understanding that they themselves have. The notion of 'the other' does also show that there is some contention between the values and shared understanding of the students and 'the world out there'.

The discussion content outlined above highlights the wealth of experience the WebAutism student group brings to the learning experience. As can be seen from the above extracts, most discussions showed evidence of students seeing things from different perspectives, working together, helping one another, sharing common assumptions and experiences. This is a community where students ask one another for advice, talk about their experiences, describe the settings they are in, sympathise and empathise with one another and try to see things from different points of view. Students display an awareness of their own position and how their experiences might enlighten others. They frequently make overt statements about where they are situated, for example as a parent, as a learning support assistant, as a speech and language therapist. Students talk about their

practice in terms of describing it, and talk in particular about issues they find difficult.

In this community, a shared discourse and common notions of what constitutes good practice gives the appearance of creating a safe interaction space for the students. Once group identity is consolidated, more challenging questions emerge and the group are able to define further common values, understandings and goals through processes of resolution. The communities of practice framework enables us to understand this as a fluid process in which we focus on meanings, identity and knowledge building as interrelating closely with one another. The social ties in this kind of community therefore appear to be a function of patience, growth, and continuity over time. The development of trust and group cohesion are important (Macdonald, 2002) and this confirms other research which has found that collaboration is often richer among students who know each other (Oliver and Conole, 1998); social presence is a major factor associated with satisfaction among participants (Gunawardena, Lowe & Anderson, 1997) and that the permanence of posted messages highlights the importance of trust and safety among members (Palloff & Pratt, 2001).

7.8. Summary

This chapter was concerned with how students develop as a learning community through the online communication medium entitled Time-to-talk, as described in chapter five, and to what extent this type of collaborative activity contributes to the creation of a community of practice. The chapter explored whether dialogue in this context enabled the development of community and it

drew heavily upon Lave and Wenger's work on communities of practice (Lave & Wenger, 1991). Two measures were considered important in analysing the data. The first related to learner appropriation of the professional discourse, values and goals of the ASD carer. The second aspect looked at collaborative engagement with each other's contributions. Online dialogue analysis found evidence of emerging common values and goals and appropriation of the professional discourse of the ASD carer. Students shared values about what constitutes a good practitioner and expressed mutual interdependence on a number of levels. Discussions showed a shared sense of vocation and what makes them as a group 'special'. Findings showed that students expressed a strong sense identity as carers and practitioners in the field. They co-constructed shared understanding through belonging to outside communities. Discussions showed interesting engagement with one another's contributions. Whilst re-initiating sequences were indeed good indicators of engagement with each other's messages, the analysis found that there were also other patterns of interaction which are productive for the learning goals of this community, including more monologue type contributions. These enabled students to reflect on practice and to share experiences with one another.

CHAPTER EIGHT: THE MICRO LEVEL: PEER LEARNING

8.1. Introduction

In order to build a community of practice, I outlined in chapter four that good dialogue opportunities are essential to this process. This chapter pursues some of the themes identified in the last chapter by focusing in more detail on the concept of how peers communicate with one another and take on different roles within the community itself, thus engaging in a process of legitimate peripheral participation (Lave & Wenger, 1991). This frames learning as a process of enculturalisation in communities of practice through activity and social interaction in a way that is similar to craft apprenticeship (Brown, Collins & Duguid, 1989). It has been described as moving the learner from a newcomer status to more expert skills by first participating in the community periphery and then taking a more central role in it (Lave & Wenger 1991). An important part of this learning process is the notion that individuals grow into the intellectual life of those around them, either assimilating and accommodating new knowledge to the old through exploratory talk (Barnes, 1976) or learning best when they are in situations where they can be equal conversational partners and can explore their own interest through extended conversations (Maybin, 1994).

These issues are explored through highlighting the contribution of one key individual in each group and analysing that contribution in order to provide a narrative about how that person communicates with the others, shares values and repertoires with them and gradually becomes a central member of the community. This chapter does this by extending analysis of the mode group to

analysing discussions in three different groups. These are the mode group, the lowest posting group and the highest posting group. The chapter examines the contribution of three individual students who were chosen because they posted the highest number of postings in each group. Their intervention in the group is analysed both in terms of what their postings tell us about them as individuals and their positioning within the community but also in terms of the impact that they have on the discussions as a whole, including how other students relate to them. I then discuss the findings in relation to methodological issues related to the research and also in relation to the notion of legitimate peripheral participation (Lave & Wenger, 1991).

8.2. Context

In order to build a community of practice, many facilitators in online learning communities recognise that good dialogue opportunities are essential in this process (McConnell, 1994). The importance of this aspect of learning is based upon the premise that discussion, if properly structured, can develop a number of skills including self-evaluation and reflective abilities as well as expose students to a broad range of work (Alexander, 2004). Through discussion, students can develop an evolving state of understanding, an ability to conceptualise and higher order thinking (Entwistle & Entwistle, 1997). The underlying assumption is that by encouraging discussion and collaboration, students become more involved, and are more engaged in the learning process (Fowler & Mayes, 1999; Webb et al., 2004). This collaborative experience can be defined as a learning process that emphasises groups of cooperative efforts among teachers and

students or as an exchange of thoughts and ideas that help students to review and build their own understandings and that also crucially enables the development of community (St Claire, 2004; Stacey et al., 2004, Allan & Lewis, 2006).

Many studies stress the importance of focusing on both cognitive and affective factors in this context (Daniels, 2001; Alexander, 2004). Edwards and D'Arcy (2004) see the first as related to 'subject matter concepts.' These are ways of thinking related to a curriculum subject. Students need to become familiar with the language of a discipline and its academic genre to communicate effectively (Edwards & D'Arcy, 2004). This familiarity will be indicative of students' abilities to read and write appropriately within a discipline (Lea & Street, 1998). The second are related to 'affect' and cover notions of 'togetherness' (Edwards & D'Arcy, 2004; Hedegaard, 2002). If students are to collaborate, they also need to learn additional skills such as teamwork, and negotiation, decision-making and task management (Mason, 1991; Benzie, 2000; Macdonald, 2003). By becoming engaged in their own learning, students develop the skills, self-theories (Kolb, 1984) and tools to continue their studies as open and autonomous learners. These relate to group processes in the study of learning and how inter-subjectivity is created and maintained. This includes stressing the importance of relational agency, and the capacity to use the support of others in order to learn (Edwards & D'Arcy, 2004).

Wood, Bruner and Ross (1976) originally coined the term 'scaffolding' as a way to describe the effective intervention by a peer, adult or competent person in

the learning of another person. Bruner explicitly relates the term scaffolding to Vygotsky's Zone of Proximal Development (ZPD) (Vygotsky, 1978). This 'scaffolding' can also include how peers support one another and the notion of relational agency. Edwards & D'Arcy (2004) argue that relational agency is a capacity to recognise and use the support of others, the ability to seek out and use others as resources for action and equally to be able to respond to the need for support from others. They see relational agency as a fluid and open-ended notion of the ZPD. Engaging in the dispositions of others gives students the opportunity to gain new insights into the phenomena they are tackling. They can draw on the histories and interpretations of others in their sense making and are not riskily isolated (Edwards & D'Arcy, 2004). This chapter explores how students support one another within this specific community of practice. It looks at the notion of relational agency, and how individuals move from a position of legitimate peripheral participation to playing a more central role in the community.

8.3. Findings: Balance of participation

The first stage of this part of the research focused on posting distributions and balance of participation. When all Time-to-talks were combined in each tutorial group, a clear picture emerges. In Group L and Group M, three people posted higher numbers of postings than anyone else (see figures twenty two and twenty three).

Figure 22: Overall distribution of Time-to-talk in the lowest posting group (L). The key shows the initials of the students.

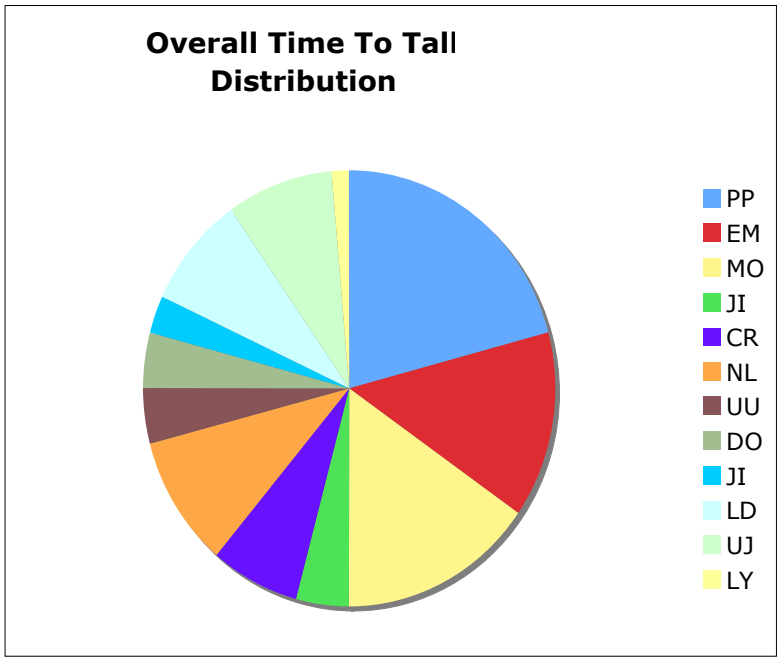
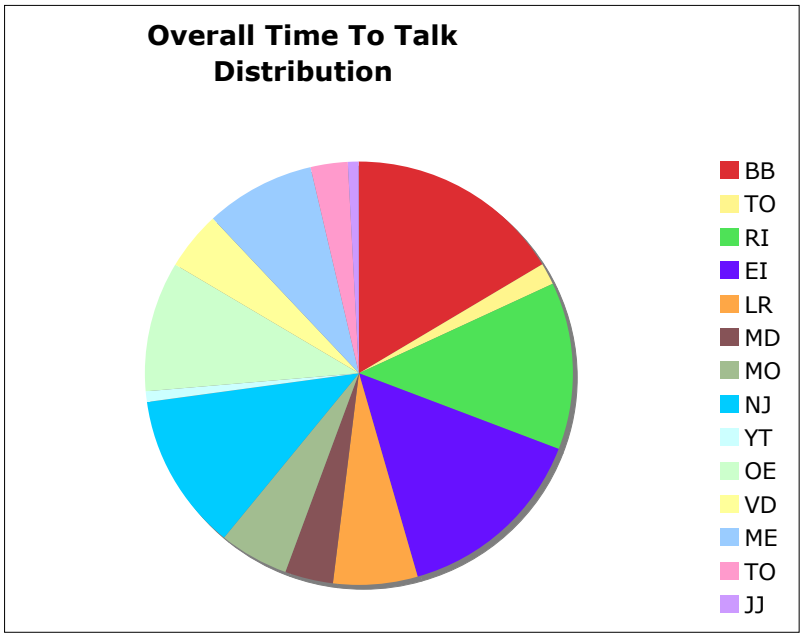
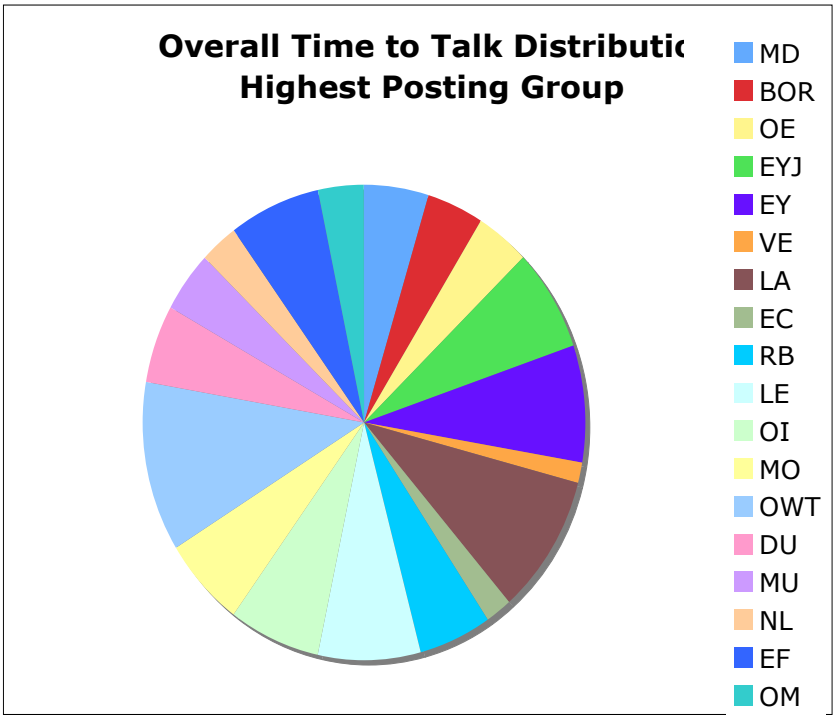


Figure 23: Overall distribution of Time-to-talk in the modal group (M). The key shows the initials of the students.



The highest posting group (H) shows a different pattern with more even distribution of postings and not such a clear picture emerging of some people posting a lot more than others.

Figure 24: Overall distribution of Time-to-talk in the highest posting group. The key shows the initials of the students.



It is worth noting at this stage (and this is explored further in the discussion section) that in group L and M, a third of the group are parents and all the three highest posting individuals in those two groups are parents. In group H a quarter of the group are parents. Despite the lower number of parents in the overall student group, analysis of these three tutor groups shows that parents consistently post more than other members of the community across all the groups. For example, in group L and M six of the highest posters were parents.

I was interested in what this posting distribution might tell us about what was happening in this peer-to-peer mediated environment. This lead me to pick out the highest posting individual in each group (the person who had posted the most messages cumulatively across all discussions) and to analyse that person's contributions according to how the person impacted upon the discussion as a whole. The three individuals with the highest number of postings across all the discussions were Maria from group L, Anita from group M and Mandy from group H (all names have been changed for anonymity). The information below summarises what the students disclosed about themselves in the discussions and then looks at the number and lengths of their posting contributions in turn to see what this can tell us about their respective roles in the discussions.

Maria is a parent with a young daughter with an ASD and is also a School Governor.

> *My daughter was diagnosed autistic at two and half years of age. This enabled me to come to terms with her differences. I am an SEN governor of a primary school and play a large part in the education committee of x Autistic Society.*

Maria comes across as a strong person who will challenge practitioners and professionals by for example taking over the coordination of her daughter's annual review.

> *I agree that individually there are a lot really helpful professionals out there. It is planning and teamwork that seem to be lacking. I have been told many a time that it is not that person's responsibility and have spent much time ringing round in circles to find who does have that responsibility. I have taken to organising my daughter's statement review so that I know everyone needed has the*

information in advance for a productive meeting without me having to explain things over and over again. Believe it or not I actually save time this way. I do at least know who has had input to my daughter's needs over the last year whereas each individual professional does not. Perhaps this is where key workers would be very useful. If every family had a key worker who was responsible for disseminating and collecting all the reports and information in one place no one would be able to say, "I wasn't aware of that".

Her social network is solid outside her family and she has connections in America who support her in her care for her daughter.

My main support is from America and from the network of helpers that come to work with my daughter in her home programme. Some of these people are now what might be called substitute family and friends. For the last couple of days I had a Son-Rise Teacher from America visit our program and help us to move Rosie forward as well as to train me further so that we can move the whole program forward.

She uses a particular educational approach for her daughter, is a strong advocate for that approach but also sees herself as using an eclectic approach and is very involved in struggling to meet her daughter's needs:

We decided that due to her lack of progress after three years of school that we would try the Son-Rise Approach. We have gone from strength to strength since. If we had not had the early diagnosis then many years would have been wasted and through trying school with all the best possible help that we were able to get, we knew then that we had to look elsewhere.

We run a Son-Rise Program for Rhiannon, which started in September 2001. At the moment I am negotiating a gradual re-integration into a local primary school for her that will be sympathetic to our program. I am expecting it to be a very gradual and well-planned integration to foster success.

In our home program we use Son-Rise as a base approach but also use elements of TEACCH and PECS. As this is a parent led programme you could say there is an element of The Hanen Program and having read Kate Tierney's paper on Non-Directive Therapy there are elements that are similar to Son-Rise. I have also

> *found similarities in Son-Rise to Nind and Hewitt's Interactive curriculum. I would probably find more if I looked further. I would definitely call ours an eclectic approach, but one that is tailor made to the needs of the individual child. Perhaps this is the key to eclecticism. The approaches have to be helpful to the individual not just easy to take on board in a particular setting.*

In her contributions, she describes herself as battling against the system, feeling tired, sick of fighting, and does not feel professionals are doing what they should.

> *I for one am tired of trying to pull it all together for my child. As a parent with a home programme to run and another child who is equally important, I find it very time consuming to be chasing Educational Psychologists, curriculum experts, and local authority officers. Time spent on visiting schools, talking to head teachers and always having to start from scratch when explaining our situation is making me feel like a cracked record that keeps getting stuck at one point.*

Maria establishes herself by posting long contributions 'telling her story'. She also has the confidence to disagree with others and is not afraid to show disagreement and slightly different perspectives from others. Nevertheless, when this disagreement is stated, she makes a lot of effort to state what it is she disagrees about and why. Disagreement is raised very cautiously (see figure twenty five below).

Figure 25: Extract of debate with disagreements and nuances in perspectives. The extracts are in chronological order.

Question	*Peeters and Jordan (1999) finish their article with the following words: "Amor NON vincit omnia. Autism is different". (Love does NOT conquer all). In your own words, comment on what you understand by this statement in the context of the article and whether you agree with it. Do you agree with the notion that carers and practitioners in the field of ASD need to have characteristics that make them 'qualitatively different'?*
Other student	*After reading through the section, I agree with a lot of what is written, especially 'never be satisfied with how much one knows', that learning about autism is on going which may be part of the reason I am doing this course.*
Maria	*I would suggest that an interest in ASD and a desire to make a difference to the life of individuals with ASD is more beneficial than love. I do not agree with the notion that carers and practitioners of people with ASD need to be 'qualitatively' different. I would argue that we could say we all need to be qualitatively different to do our jobs. For example, fire fighters, nurses, teachers, police workers, and shop assistants. Do not all these jobs and of course many others require certain characteristics for the worker to be successful and good at their job. I do not think that being a carer or worker in the field of autism should be singled out.*

We can see from the figure below (table nine) that Maria posts regularly and contributes to all discussion, beyond the minimum requirement of two postings for a discussion. Some of her contributions are also quite long. Thus we see that her longest contribution is eight hundred and seventy-two words and a few other contributions are over three hundred words long. Laurillard (2002) makes the point that some research has found that the average length of postings in the online bulletin board is around two hundred words per post and that this represents approximately a minute of speaking, which would make Maria's eight hundred and seventy-two word contribution equivalent to a four minute speech and represents a substantial time commitment.

Table 9: Numbers of postings and word counts of those. Maria, Group L.

	Number of posts	**Word lengths**
Time to Talk 1	4	379; 373; 169; 100
Time to Talk 4	3	362; 272; 183
Time to Talk 10	3	88; 415; 148
Time to Talk 13	4	85; 546; 130; 97
Time to Talk 16	2	195; 872

However, this does not in and of itself give us a full picture of how she impacts on the discussion. For example, does she dominate discussion? Do other students refer to her in their contributions? Is there evidence of her contributions influencing the wider discussions? In order to answer this, I looked more carefully at interaction patterns between Maria and other students as I hoped this might give a sense of the kind of role Maria had in the group, whether other students responded to her and whether she responded to other students.

Each posting was coded according to whether it was a direct response to the question posted (R), whether it was a response to another student and thereby contained a re-initiating move (RI) or whether it was a new initiating inquiry (II). I also coded the postings by Maria as M and signalled whether students who were re-initiating were responding to Maria (RI (M)) or whether they were responding to another student (RI (O)). Analysis of a string of the first twenty postings shows a sample interaction pattern below (see figure twenty). Maria is the first to post and she posts a response to the question.

We can then see that the next four postings consist of other students posting answers to the question without referring to anyone else's postings. Then Maria responds to the question again herself, and this is followed by some more interactive sequences. The first re-initiate is another student responding to Maria, followed by two contributions focusing on the question, before Maria re-initiates the discussion with a student responding to her and further followed by other re-initiating moves in which students respond to one another. This sequence is fairly typical of the interaction patterns of other discussions in relation to Maria's role in particular and she is always one of the first two students to post. By looking at this sequence, it suggests that if the sample is indicative of discussions in general, then Maria plays a fairly central role in the community, is responded to more often than others and responds to others more often than anyone else but that this group has a reasonably even balance between straight responses to the question (8) and re-initiating postings (7) with one inquiry initiate (II).

Figure 26: Interaction pattern in sample of discussion for group L.

R (M)	**R**	**R**	**R**	**R**	**R (M)**	**RI CK to MM**	**R**	**R**	**RI (M)**	**RI KM to MM**	**II Other**	**RI KM Other**	**RI (M)**	**RI Other**

Before discussing the implications of these findings, I adopt a similar approach to the highest posting individuals in the two other groups. After that, I look at how the overall discussions in the groups differ before moving on to discussing implications of these findings.

Anita is also a parent and has a son with an ASD who is now in his twenties. Her son did not get a diagnosis until he was nineteen and it made so much difference to her after he got his diagnosis that she is determined to help other people.

> *From a parent's point of view I think diagnosis is essential to ensure children receive the right help from the various agencies. Diagnosis also brings understanding. Due to my own son not being diagnosed till 19 years of age he was totally misunderstood by friends, family and school and virtually became an outcast. We have literally been to hell and back. It is only since his diagnosis that we have, as a family begun to come to terms with things and been able to attempt to access what little help is available. I am determined to get myself qualified to help and support others in similar situations. My son has also had his world opened up beyond belief.*

Anita is involved in running workshops and setting up support groups, is also a learning mentor in a school and is therefore in a position to comment on issues both from a parent and practitioner's perspective. She states that she wants to turn twenty years of pain and despair into something positive and also comes across as a strong person with depth.

I wondered if anyone had any learning mentors in their school. I am able to provide valuable links between teaching and support staff, home and school. Because I also have experience and knowledge of autism I am able to provide support and advice to colleagues and suggest possible strategies to situations. Having supported my son through school without a diagnosis I am able to have an insight into the difficulties faced as a parent. Working in education in a school setting has given me another perspective.

In terms of her postings, she gradually takes on a tutoring role over time with other students, giving people positive feedback, responding and offering lifts to tutorials. This includes being positive and affirming towards others as well as being open and empathetic.

Hi Karen, It was really interesting reading your views and the experience you have had working with children who have had early and late diagnosis. From all the messages I am reading I get the general feeling that everyone agrees early intervention and diagnosis are important. Anita. Maris, did you see my message offering you a lift to the tutorial next week?

Hi Pat, I cried when I read Gary's story. It upsets me to think how many undiagnosed misunderstood people there are like my son and Gary.

When she responds to others, she uses examples from her own experience and conveys a real enjoyment of the discussions. Anita often offers very helpful and constructive advice, particularly in the latter discussions. This includes advice to other students about where they can go to apply for funding for the course. She states her opinions but is also very interested in the opinions of others, responding to others and gently nudging them to see things from a balanced perspective. On analysing Anita's contributions we find that she shows an interesting posting pattern as she posts as many as fourteen postings in the first discussion and is also the first person to post in this. After that, she only posts between one and two posts per discussion. Her postings are shorter than

Maria's. In fact, her longest posting is two hundred and seventy-five words and her shortest is fifty in Time-to-talk one whilst she posts as many as fourteen post, thereby contributing significantly to the number of postings for this group.

Table 10: Group M. Numbers of postings and word counts for each posting.

	Number of posts	**Word Counts**
Time-to-talk 1	14	153; 50; 241; 119; 102; 53; 169; 88; 123; 204; 107; 195; 129; 222
Time-to-talk 4	1	117
Time-to-talk 7	1	275
Time-to-talk 10	2	251:135
Time-to-talk 13	1	133
Time-to-talk 16	2	65:178

In terms of analysing interaction patterns in the same way as described above with Maria, we find the following. Similarly to Maria, Anita opens the discussion by responding to the question before anyone else does. This is followed by a response to the question by another student. The discussion then rapidly becomes very different from the discussion in Group L, in that two students respond to Anita and then other students respond to one another and to the group as a whole in a string of postings before Anita re-initiates again, followed by a student responding to her and two postings from Anita responding to other students. Again, Anita clearly also plays a central role in the discussions, with more students responding to her than to Maria, but equally she makes more re-initiating moves herself. This group is characterised by a large number of re-initiating moves and Anita is clearly central to this in the first Time-to-talk as she

herself re-initiates discussion with other students twice whilst other student srespond directly to her three times. However, in subsequent discussions, she posts later in the discussions and has a less prominent role in terms of her impact on discussions through other students responding to her or her responding to them so this interaction pattern is not typical of interaction patterns in other discussions.

Figure 27: Interaction patterns in group L.

R (A)	**R**	**RI to AA**	**RI to AA**	**RI to O**	**RI to O**	**RI to all**	**RI to O**	**RI to O**	**RI (A)**	**RI to AA**	**RI (A) to O**	**RI (A) To O**

Mandy works as a Learning Support Assistant in a specialist unit for children with ASD. She also talks about the environment in which she works, about her role at work and describes some of the children with ASD with whom she works.

> *I work in a specialist unit for autistic children aged five to eleven, although the unit as whole goes up to nineteen. As we have small groups we are able to give one-to-one support to the children in our unit. Due to our small numbers we individually know our key children and the degree of their ASD. This option is open of course to the parents of the children, but as they realise, we cannot help their children to the best of their potential if they do not tell us their advantages and disadvantages. So we are able to know what our children react well to and not so well to. We know how far to stretch them, and the best ways to do this. Without a diagnosis this would not be possible, and I do not believe that we would be helping the children in the right way.*

Mandy is more detached in her descriptions than Maria and Anita and gives less personal information. There is little self-disclosure and she does not use emotive language.

Hi everyone, I do agree that it is important for people to be diagnosed, as I think that they need to have as much help and support as they can. I also feel that it is important for the parents to know that their child has an ASD, otherwise they will be wondering what is wrong with their child and be blaming themselves for their child behave. Whereas if they have a diagnosis for their child then they can start to help their child in the right way, and know the best way to help their child. They can also get other help and correct support for their child.

She advocates a strong partnership between parents and practitioners and often reiterates what other people have said.

You message about your experience, made me think of two young boys who I currently work with. Both have ASD, but are very verbal children. One child has been with us just over a year and the second has only been with us for a couple of months. Both these children make it very clear that all they want is a friend whom they can play with, and say is their friend. Child one, who has been with us over a year, loves it when the mainstream children play with him, but he has very unusual ways of asking children to play with him. His favourite is to go up to someone, go right up to his or her face and scream. The mainstream children, as you may expect run off, giving him an odd look or laughing. Depending on the situation we will usually intervene, trying to get him to say will you play with me, or explaining to the other children that he wants to play. The newest child, child two, is extremely aggressive, over powering, and could be thought of a quite a bully. These two children have fortunately become very good friends, but sometimes child two can become too much and child one will walk away, or won't talk to him. In a way the reaction child one has, to us is great, but the fact that neither of these children can communicate their wants/needs properly is still a problem that needs to be solved. Your message just brought this to my attention, as I thought that in a way they were slightly similar. How did the person you worked with take to this other lady leaving?

On examining Mandy's number of posts and word counts, we find that she consistently contributes to discussions with an average of over three posts per discussion. The length of her contributions vary from a word count of ninety-two to the longest being three hundred and four words. This seems to highlight a

conscientious student who engages with discussions and spends time on this aspect of the learning community.

Table 11: Group H. Numbers of postings and word counts for each posting.

	Number of posts	***Word Counts***
Time to Talk 1	3	256; 271; 111
Time to Talk 4	2	297; 294
Time to Talk 7	4	181; 503; 315; 133
Time to Talk 10	2	143; 310
Time to Talk 13	5	92; 248; 58; 111; 167
Time to Talk 16	3	63; 304; 211

However, when we examine interaction patterns, Mandy does not emerge as clearly as Maria and Anita as impacting strongly on the discussion (see figure twenty nine). On analysing interaction patterns, we find that Mandy appears to take on a different role to both Maria and Alison. Firstly, she does not post until there are already nine other postings so she is not one of the first to post and this is consistent across all discussions. In the sample below, we see that she then posts a response to the question and this is followed by some debate containing re-initiating moves by other students but no one responds to Mandy's contribution directly and neither does she respond or re-initiate with anyone else. Although the discussion in the group is characterised by a large number of re-initiating terms, none of these involve Mandy. In fact, in this string of postings, Mandy has only posted one direct response to the question.

Figure 28: Interaction patterns in sample of postings in group H.

R	**R**	**RI (O)**	**R**	**RI (O)**	**R**	**RI (O)**	**RI (O)**	**RI (O)**	**R (MR)**	**RI AII**	**RI (O)**	**RI (O)**

There can be two explanations for this interaction pattern. One is that power relations might be more distributed in this tutor group with more even contributions and interaction patterns between students or it could be that Mandy has less to say that other students feel inclined to respond to. It is possible that this sample of interaction patterns shows that Mandy potentially plays a less central role in the community than both Maria and Alison. This may in part be due to her personality but there is the possibility that it could also be related to her position within the community and with the role that she has in her boundary community. However, before exploring this further, I look more carefully at the interaction patterns of the group as a whole in order to try to understand Maria, Anita and Mandy's positions within the tutorial groups further.

8.4. Findings: Contrasts between groups.

A common thread between all three groups is that the nature of Maria, Anita and Mandy's postings are very typical of the tone of the discussions of their respective groups. In group L, for example, Maria posts long messages, has very definite opinions and posts a large number of long postings. This also characterises the discussions as a whole in that tutorial group. Postings are often quite long in this group with key individuals expressing strong opinions. Parents have a high profile in these discussions and there are many comments on the difficulties parents face. Group L is thus characterised by a strong sense of

parents ‘fighting’ against the system, highlighting to the group that their experiences have been difficult. There are many comments on how difficult things can be in reality and that the notion of partnership working is complex:

> *That was it folks, no referrals, no support, no advice, no gentle words. There were no soft cushions or gentle words and I can recall that moment vividly (discussing sons diagnosis).*
>
> *We kept being told Carl was deaf (and he actually was as it transpired) but we knew there was something underlying too. We had to fight for almost a year by which time he had gone from two to almost three (the eve of his third birthday in fact is etched on my brain forever) before we could get a consultation with someone to see him.*
>
> *In essence it is good that they wish to know more about ASD but channelling what they have learnt into a cohesive approach can take some organisation. When you have a Head, class teacher, area support worker, S&LT, area SENCO, Teaching assistant and our son's LSA (and us) all with their own knowledge about particular approaches it is extremely important that opposing strategies and differing philosophies are managed effectively.*
>
> *I have found over the last year, whilst trying to get some access for my daughter to a mainstream school, that transition planning and co-ordinated services as well as multidisciplinary working are a figment of my imagination. Inclusion seems to scare any level-headed head teacher and petrify teachers. They still want to fit the child in to a hole that does not fit.*
>
> *It seems that even with NAS Bill parents are still the ones who seem to be fighting for the correct input for their child. I think some of the problem lies with the fact that there are not enough ASD trained people, I know of one LSA who said when she was trained it was a basic disability course, and as we know you cannot put autism and say downs syndrome in the same category.*

In contrast to this, group M has a very different character. We saw earlier that Anita’s contributions were characterised by empathy and openness and that she took on role that had a lot of similarities with a tutor role, offering lifts to tutorials and advice on how to seek funding. The group M discussions were characterised by many examples of self-disclosure and empathy for one another

and the person with an ASD. There were few examples of students talking about frustrations and difficulties. Students did often express their desire to get feedback from other students and overtly stated that they valued being able to hear others' views.

Figure 29: Group M. Examples of typical type of postings in that group.

Empathy	**Valuing feedback**
Amanda, I feel so sorry for your situation, it is so unfair.	*It does help reading through everyone's reactions to the material and how we all interpret it*
You have my sympathy.	*I know that I need to do some further reading on this area but would value any feedback from any of you.*
I cried when I read Gary's story. It upsets me to think how many undiagnosed misunderstood people there are like my son and Gary.	*As an SLT it is very interesting and useful to hear parents views.*
I feel this discussion is very sad because most postings reveal very sad experiences	*It's really interesting and informative reading other views and ideas.*
You are not on your own. I found reading these sections very difficult too.	*What would those of you who are parents of children with an ASD feel about such an early*

Group L, on the other hand, also showed a different flavour of discussions. We saw that Mandy (group L) was very cautious about how she expressed opinions. By extracting some examples (see figure thirty), we find that these discussions are characterised by politeness and caution.

Figure 30: Group L. Examples of typical postings in that group.

Cautious Language	***Reassurance and acknowledgement***

May I ask?	*Thank you for your comment…*
Could it be?	*From a personal point of view I totally agree that.*
Correct me if I'm wrong	*It sounds like you do a very valuable job in supporting parents through receiving a diagnosis.*
What does anyone else think? Am I making sense?	*I agree with Linda when she says that we must constantly extend our learning.*
I think I agree that there is more awareness of ASD but there is still a great deal of ignorance out there	*It was really interesting reading your views and the experience you have had working with children who have had early and late diagnosis*

Despite these differences, the groups also have some clear commonalities. These include the fact that the discussions across all three groups are characterised by agreement between students and a sense of cohesion. Most students will respond to the question or to another student. They will then make an overt statement that they agree. The numbers of statements in which students reinitiate a new topic are proportionally lower than responses and agreement for each group and the numbers of statements in which a student responds and disagrees are even lower (see table twelve). Another characteristic across all three groups is the lack of questioning, of one another or of the programme materials.

Table 12: Categories of statements

	Group H	Group M	Group H
Statements where a student responds to another and agrees	66	48	32

Statements where a student responds and re-initiates a new topic	16	12	5
Statements where a student responds and disagrees	6	3	2
Statements where a student asks a question	4	4	1

8.5. Discussion

The above analysis shows some interesting findings but before discussing these, it is worth noting some methodological problems. Mercer and Littleton (2007) stress that there are complexities in analysing classroom talk and I would argue these complexities apply to online discussions too. Given the understanding that talk mediates joint intellectual activity, and that it is historical and embedded in its social context, then there are likely to be a number of aspects of the speakers' histories that the analyst does not have access to. The contextual foundations are likely to be built on a number of interrelating factors, such as students' experiences in boundary communities, the background and settings of individuals and their place in the tutorial group. Talk in the online bulletin board is also likely to be influenced by the relationship between members and how they interact face-to-face. It may even be the case that students interact differently according to whether they are discussing issues face-to-face or whether they are conducting discussions online. There are therefore multiple interacting variables which are difficult to isolate but include the communication medium, the group dynamic, the topic or content to be discussed, the task and

ground rules (instruction) and individual differences (Mason, 1991). Furthermore, Mercer and Littleton argue that shared histories and common knowledge may lead to participants being less likely to be explicit about these common histories and shared knowledge and this can provide a challenge to the analyst. It is therefore important for analysts to find ways of measuring how this joint knowledge is constructed whilst recognising that this analysis of online discussions is only able to examine issues in 'a partial limited fashion, by sampling their discourse over time and by drawing in our analysis on any resources of common knowledge we share with the speakers.' (Mercer & Littleton, 2007, p. 139).

The results from this analysis of three discussion groups over a period of time shows the value of analysing data from online discussion over time to gain a sense of how people interact. Mercer and Littleton (2007) stress the importance of temporal analysis because we need to understand how talk develops over time and in context. They stress that it is important for the analyst to try to share the perspectives of the participants rather than to distance him or herself from the perspective of the participants. This can allow the researcher to know a culture from inside and to appropriate the participants' competence systems. This in turn can enable a richer interpretation of events. It also allows a focus on how ideas change over time and through this how concepts, ways of using language and ways of solving problems are appropriated and influence the discussions.

Lave and Wenger (1999) argue that this learning is enabled through a process of legitimate peripheral participation. The original conception (Lave &

Wenger, 1991) was that experts, practitioners and mentors in the environment gradually transfer responsibility for their learning task to the novice learner as they internalise greater skill and knowledge for the discipline. The central characteristics of apprenticeship were later recast in terms of legitimate peripheral participation. This notion entails that one can support learning in a domain by enabling students to acquire, develop and use conceptual tools in authentic domain activity. From a broadly peripheral perspective apprentices gradually assemble an idea of what constitutes the practice of the community. They state that it is not always a master apprentice relationship but that apprenticeship depends on the characteristics of the division of labour in the social milieu in which the community of practice is located. Lave and Wenger's work (1999) here takes a decentered view, moving the focus of analysis away from teaching and onto the intricate structuring of a community's learning resources and grows out of a recognition that learning does not always arise out of teaching and that we can not necessarily assume a causal link between teaching and learning or between learning and teaching (Laurillard, 2002).

In this view, apprentices are seen to learn more with and through other apprentices rather than through a master-apprentice relation. When there is circulation of knowledge between peers then knowledge can spread very rapidly. Development of identity is fundamental to this concept of legitimate peripheral participation. Wenger argues that people have a variety of different ways in which they communicate and connect with one another and it is this participation in human practices that makes us who we are. If knowledge acquisition is activity in

context and learning is about becoming a member of a certain community, then knowledge as a competence becomes something intrinsic to who you are and what you are you doing and is an integral constituent of engagement in social practice. It arises from activity that involves the whole person, takes place in and with the world; social practice where the agent, activity and the world mutually constitute each other (Lave & Wenger, 1991, p. 33).

Indeed, Jordan (1989) argues that learning to become a legitimate participant in a community involves learning how to talk (and be silent) in the manner of full participants. She highlights that there is a difference between talking about a practice from outside and talking within it. She points out the importance of stories in apprenticeship and that they can play a major part in decision-making. This has implications for what and how newcomers learn. Her research into midwifery found that apprenticeship learning is supported by conversation and stories about problematic and especially difficult cases. The stories themselves are situated knowledge and telling a personal story is a tool for diagnosis and reinterpretation. It becomes a display of membership by virtue of fulfilling a crucial function of shared practice. For newcomers then, the purpose is not to learn from talk as a substitute for legitimate peripheral participation, it is to learn to talk as a key to legitimate peripheral participation. Talk here becomes an embodiment of practice and cannot be seen in isolation from practice. The challenge is therefore to understand the practice first and to see how speech or speech communities arise out of that practice, including what text or talk tells us about the practice as a tool of meaning making to engage the person in the

experience of seeing the world in this way. In this view, language functions through practice and is also embodied into practices. It is practice that drives the language and the discourse. Learning is therefore viewed as appropriation and use of a particular social language. Language is here seen as symbolising belonging and carrying a way of constructing reality and practice.

Wenger (1998) emphasises that discourse on identity is about highlighting who we are and how we change through learning experiences. This in turn helps create personal histories and has the potential to facilitate both individual and community development. It is clear that in this community, students formulate their own identities, foster new relationships, and form impressions of other participants. They talk about practice, from the 'inside' as practitioners and parents. Their stories are different but there are parallels and commonalities between them. Their learning is, as Jordan's (1989) research into midwifery found, supported by conversation about their practice, often about problematic and difficult cases and situations. The stories themselves are forms of situated knowledge and telling a personal story is a tool for drawing on the support of others. It fulfils a crucial function of shared practice. The data supports the notion that these forms of interaction and approaches to learning can favour the construction of knowledge and help to develop reflective skills and a sense of 'togetherness' in the group through sharing stories with one another, developing identity through the discussions and through this enabling the development of community.

When looking in detail at the roles of these three individuals, we see that they take on slightly differing roles according to their own experience outside the network but also according to their own personalities. We can see from the three highest postings students, that they have clear identities in boundary communities and their roles in these boundary communities are brought into these online discussions. These roles in boundary communities are likely to be important to students and could well determine the transformative power of the network (Reeves & Forde, 2004). Hence Maria's connections in America and her role as an SEN governor are explicitly brought into the discussion and she draws on her experience to construct an identity and play a central role in this community. Anita draws on her experience as both a parent and practitioner to the extent that she can take on a tutoring role with the other students, welcoming and supporting, including offering lifts to tutorials. Mandy, on the other hand, comes across as less confident, with a different set of experiences.

It is interesting to note that Maria and Anita are both parents and that Mandy is a learning support assistant and this might in part affect their roles in this community. One of the aims of WebAutism is that people with different perspectives (parents, practitioners and those working with children or adults) will learn from one another and gain a more holistic notion of the person with an ASD by thinking about that person's needs across a range of environments and also across the lifespan. Discussions should, therefore, help people gain a broader perspective about how to support a person with an ASD through 'talking to' people who have different perspectives and experiences. The distribution of

postings between different subsets of this community is therefore interesting. The high frequency of posting by parents could signify a number of things. It could mean that they have a more burning passion for the topic. They may also need a support network more than practitioners and therefore welcome this opportunity for building one through the course. There is a history, in the field of ASD, of parents having to lobby very hard for provision, support and services for their children. These parents' experiences may therefore have led them to be vocal and to 'fight' for their rights (Fleischmann, 2005). It is possible too that practitioners feel that they need to defer to parents as parents are the 'true experts' and do not feel in a position to challenge a parents' perspective. At this stage of the research, one can only speculate and this issue needs to be addressed through further research.

It is nevertheless clear that the three participants in these discussions change their degree and level of participation over time alongside changes in their sense of ownership of the community (Lave & Wenger, 1991). We see the students establish their roles by disclosing information about themselves and sharing thoughts and experiences. Through this the group develops their own tone and shared repertoires with one another. We see the community developing over time and with an ability to manage some activities more effectively as they develop (Tuckman, 1965; Salmon, 2000; 2002; Guldberg & Pilkington 2006). These findings also show that students are involved in a reflective experiential cycle and are learning to reflect with and through others (Kolb, 1984). This cycle involves students applying and testing acquired understandings in 'authentic'

situations and then reflecting upon those with peers or tutors and through this process modifying their outlook (Kolb, 1984, Wenger, 1998). By providing opportunities for learners to consider the strengths and weaknesses of ideas from multiple perspectives (Laurillard, 2002), these forms of interaction and approaches to learning favour the construction of knowledge and help to develop reflective skills and a sense of 'togetherness' in the group. The research supports the notion that key individuals have taken on the role of 'scaffolding' and supporting others and through this process their contribution impacts on the discussion as a whole thereby enabling themselves and others to move from a peripheral position to become a central member of the community, representing and transmitting community values. Thus the notion of 'legitimate peripheral participation' and the shift by individuals from peripheral to central participation over time suggests communities are not static but dynamic.

8.6. Summary

The above analysis, through combining qualitative analysis with interaction analysis and numerical approaches, has tried to capture the development of the community over time. It has tried to encompass the relationship of the individual to other communities both cyber-communities and face-to-face communities; the ways in which the understanding and ownership of objectives by individuals varies; the ways in which the community itself is dynamic not static in its aims, that membership and activity and that the Virtual Learning Environment (VLE) is not just one tool but a number of tools in complex combinations that relate to

multiple activities and have different access privileges/rules of engagement and affordances.

The findings demonstrate that computer- mediated-communication can be positive and can enrich the learning experience for students and that the existence of online virtual communities can be powerful mechanisms for the transmission of values. The data analysed here shows that the expectations of learning through dialogue are realised in the data so the online medium here appears to be a good medium for this. It does show that the concept of dialogic teaching (Alexander, 2004) is a powerful one that can be used and developed in an online environment. Alexander sees talk as the foundation for learning. He highlights that we are not merely talking about mere interaction here but about mediating wider cultures (Daniels, 2001) through dialogue and discussion and should use discussion to empower people to be active agents in their own learning and to help them develop as thinkers. This research supports Alexander's framework, which emphasises that it is the qualities, dynamics and content of talk that really matters in terms of it being a reciprocal process in which ideas bounce back and forth and on that basis takes thinking forward.

Findings also highlighted that parents consistently post more than other members of the community across all three sampled groups through telling their story and sharing it with others. The strength of parental input shaped discussions. Although practitioners might have been more ambivalent about diagnosing young children, for example, the strength of feeling from parental input leads the group to a changed point of view. Parents play a central role in

the community, both in terms of the extent to which they respond to other students and in the extent to which other students respond to them. In the groups studied here, one student tended to take on a mentoring role in each group. This person also influenced the posting behaviour, the tone, the character of debate and the values of that group. These students play a strong role in enabling other students to move from peripheral membership to assembling ideas about community values.

The next chapter continues exploration of roles and division of labour within the community but this time focusing in on the extent to which the role of the tutor and the wider learning and teaching resources impact on the creation of a productive community.

CHAPTER NINE: THE MICRO LEVEL: TUTOR ROLES

9.1. Introduction

The last two chapters focused on in-depth analysis of the discussion transcripts of the tutorial group having the modal number of postings to the bulletin board (Guldberg & Pilkington, 2006) and on analysis of the lowest posting, the modal tutorial group and the highest posting tutorial group (Guldberg, in press). Emergent themes included how students belong to a community of practice in which commonalities and differences are established between group members as part of a process of developing group identity; conversation as a source of empathy and support; the exploration of alternative and contentious viewpoints and their degree of resolution and development of common group values. Further themes include the notion of overlapping communities of practice and the use of the online conversation to mediate in renegotiating roles and practices in boundary communities such as the family, school and workplace and the role of different students in discussion outcomes.

The aims of this chapter are to look in detail at the role of the tutor and how the tutor facilitates productive outcomes. The chapter covers two aspects of this role which may impact on students and these include (i) the selection of the topic of discussion (the discussion question) by the programme team and how this influences the quality of the discussion; (ii) the interventions of the tutor within the online discussion. The aim is also to understand why some online discussions 'take off'' in terms of numbers of postings and quality of engagement whilst others are less successful. These issues are of particular interest as the research

community continues to grapple with how teachers can enable discussion skills in pupils and adults (Mercer & Littleton, 2007; Littleton & Whitelock, 2004) and what makes good moderators in online learning environments (Salmon, 2002).

9.2. Background

In relation to the choice of task, researchers have found that the nature and specificity of the task influences the kinds of interaction or collaboration that takes place, in turn affecting outcomes (Henri, 1992). Studies have also shown that students of all ages learn better when they have a sense of engagement in or ownership of the learning task (Schon, 1987). Yet, however important the task is, there seems to be consensus that social as well as cognitive interaction of both instructors and peers is also important in enhancing active participation and learning (Gibson, Hall & Callery, 2006; McConnell, 1994). It has been argued that the social climate can have an effect on motivation, levels of confidence and hence engagement (McConnell, 1994). Research from other sources has shown that when attempting to create an effective discourse community in a networked learning context it helps to structure debate. Discussion is also likely to be more productive when someone monitors discussion, facilitates interaction and summarises outcomes (Berzsenyi, 1999; Veerman, Andriessen & Kanselaar, 2000; Goodyear, 2001).

A key concern in enabling learning to take place is therefore the role of the tutor and the balance between teacher and student participation. Research has highlighted that the role of the tutor in the online environment needs to be one in which the conditions for friendly and constructive debate are nurtured by

establishing ground rules for collaboration and encouraging students to participate and adopt for themselves roles that they may at first think are the tutor's responsibility (Salmon 2002; Pilkington, 2003; Pilkington & Walker, 2003; Pilkington & Kuminek, 2004). The facilitation problem then becomes one of monitoring discussion and intervening to ensure meaningful outcomes without inhibiting discussion. There are some roles, which even students in Higher Education still attribute to the tutor and may be reluctant to take on themselves, particularly when the tutor is present. Such roles include making sure the focus or direction of the discussion is maintained within the timeframe of the discussion in ways that ensure all the elements of the task or question are addressed (managing the task). Students can also be reluctant to engage in directly questioning or challenging another student's point of view and may regard feedback that validates or critiques other students' contributions as the tutors' job (Pilkington, 2003).

Although it is possible for teachers to model effective dialogic techniques, active teacher participation can also limit the kinds of contribution students make and their opportunity to develop ownership of discussion-management and constructive critiquing roles (Mercer, 1995; Pilkington & Walker, 2003). Reasons for this are not fully understood but in addition to reluctance to take the (perceived) role of the tutor there may also be a fear of exposing a lack of knowledge in front of the teacher. However much this is counteracted at tertiary/ adult levels, by increasing student confidence and autonomy, the effect may still be real. Further research is needed in order to determine how the role of the tutor

influences discussion and to gain further insight into what factors contribute to creating positive environments for online interaction (Littleton & Whitelock, 2004).

In this context, WebAutism has its own specific model of facilitation. The WebAutism academic team worked on the assumption that too much tutor intervention can 'fail' student autonomy and the development of community whereas too little intervention can leave students feeling unsupported, as they need encouragement and feedback. In line with a socio-constructivist framework the WebAutism academic team aimed to encourage independent discussion skills and explicitly experimented with the theory that providing a strong structural framework for discussion coupled with a careful induction and a clear set of question topics selected for the discussion task would reduce the need for tutors to intervene frequently within discussion to manage the focus or behaviour of students. This in turn would help students develop ownership of the discussion and encourage participation.

A gentle scaffolding of discussions through formative feedback in summarising discussions as they drew to a close would also enable tutors to help students progressively develop discussion skills related to critical reflection. WebAutism tutors therefore aimed to strike a balance between intervention and support and this research is interested in how tutors can adopt an approach that gradually leaves students able to learn and develop without loss of quality feedback. The research is particularly interested in what the elements of a good balanced approach might be and whether data related to WebAutism supports

the notion that this model of facilitation is supportive of student learning, enabling good group work or discussion.

Mercer and Littleton's research (2007) in primary classrooms indicates how we can measure whether a discussion is 'good' or not. They highlight that examples of poor discussions are those where children do not listen to one another, those in which one person dominates the proceedings, those in which children argue unproductively or where participants seem to be happy to go along with what others say without any reflection or debate. Furthermore, they highlight the importance of orienting and defining, sharing ideas about how to approach a task; sharing different perspectives on a problem and the importance of encouragement, motivation and maintaining children's on-task activity. This chapter works on the assumption that these qualities are equally valid for adults participating in online discussions. The chapter is therefore interested in issues such as whether the number of turns and interactions that take place in these online discussions might determine the quality of a discussion, whether quality is determined by how long people 'speak', whether long contributions lead to less turns, whether there is a correlation between word length and number of turns and whether the nature of the type of question asked determines any of these factors.

In line with the parameters outlined in chapter six, I was interested in combining quantitative and qualitative data collection procedures in order to answer my questions and started the research by investigating how the nature of the question impacted on discussions. I began this process by looking at

quantities of postings across the three groups to determine whether certain questions attracted higher numbers of postings. Findings from this lead me to explore the interaction patterns in each discussion, investigating the extent to which students responded to one another through initiating, responding or re-initiating. As in the analysis described in chapter six, ESA as developed by Kneser et al. (2001) as an adaptation of Sinclair and Coulthard's work (1992) was applied. Previous analysis (chapter seven) had lead me to identify that distribution patterns in which there was less evidence of interaction, had high numbers of what I will describe as 'monologues' (a definition of how this coding worked is given below). My impression from undertaking analysis was that those discussions that had lower levels of interaction and higher numbers of 'descriptive monologues' consisted of postings that were of longer word length than those discussions with higher levels of interaction and less descriptive monologues. This encouraged me to explore if there was correlation between numbers of words per posting (this refers to a full discrete posting on the bulletin board) and interaction patterns. For example, did higher number of words per posting lead to less interaction? Word counts per posting covered the full post, including the greeting and ending of the post.

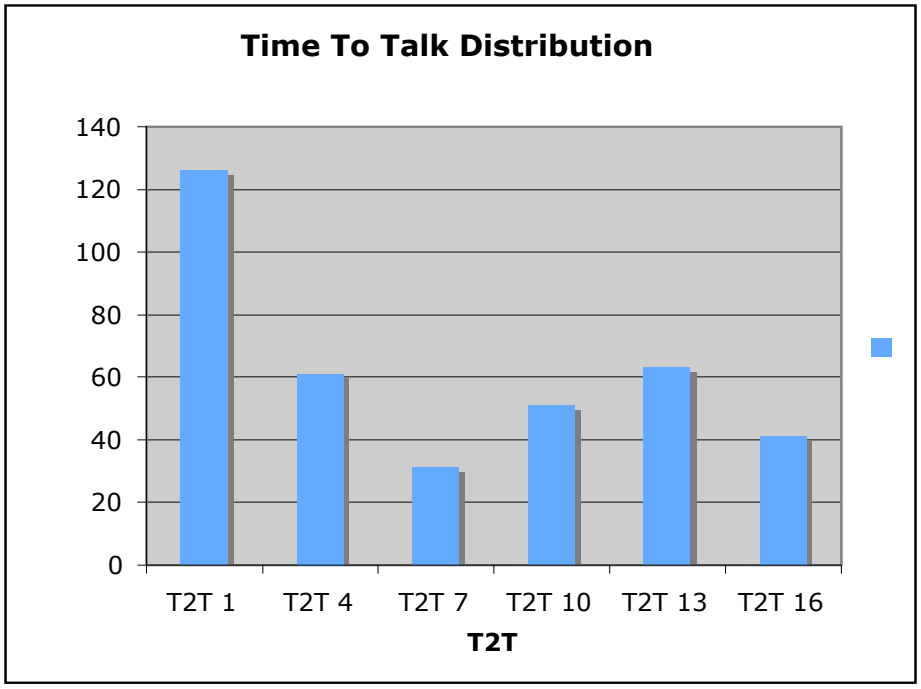
The issue of determining the impact that the type of discussion topic or question was thus measured in three ways: firstly according to the quantity of postings generated for each question across all groups; secondly according to the interaction pattern of postings generated by each question across the three groups and thirdly according to whether there was correlation between word

length and interaction patterns. Once the data had been analysed in relation to these issues, I then focused on the role of the tutor in more detail. In terms of examining the role of the tutor, I collated all postings from tutors, analysed and coded those postings according to themes that emerged from the data and these included welcoming and affirming, instructing and modelling behaviour, intervening when necessary, challenging and giving feedback. One of the perceived dangers of this model of facilitation could be the fact that without tutor intervention, students would find it difficult to stay on task. I was therefore also interested in collating information on the extent to which students adhered to topic. Topic adherence was measured according to whether the student referred to (explicitly or implicitly) the question asked during their posting.

9.3. Findings: The nature of the question

Looking at the overall data in terms of numbers of postings, they ranged between four hundred and ninety and one thousand two hundred and sixty-six in total across the thirteen groups. The lowest number of postings in any one single discussion was twelve (with the exception of one particular discussion where there was a low number of postings across all groups due to the website servers being down). In terms of the number of posts and the level of engagement with particular discussion topics it emerged that irrespective of whether the group was overall low, medium or high in number of posts, some discussion questions attract fewer posts across all groups (see table twelve). The wording of the discussion questions or tasks can be found in figure thirty one.

Table 13: Quantities of postings across the three tutor groups. Units being counted are number of posts



In terms of quantities of postings, we see that the first discussion attracts significantly higher number of posts than the other discussions. Time-to-talk four and thirteen had the second highest numbers of postings. The questions that attracted the fewest postings (with the exception of question seven in which the web servers were down for a significant period) were Time-to-talk ten and sixteen.

Figure 31: Time-to-talk questions

Time-to-talk questions
Time-to-talk one: Comment on whether you believe diagnosis is important or not. Think about an individual whom you care for or work with. Would it affect them whether they had a diagnosis or not?
Time-to-talk four: Observe someone (it does not have to be someone with an ASD) for five minutes. Write down all the different ways they communicated in the time you observed them. Comment on whether they used language to communicate throughout. Did they communicate in other ways too? For example by using body language, facial expressions and other non-verbal communication?
Time-to-talk seven: Discuss some of the issues raised by Clare Sainsbury in the essential reading. She talks about the effects of bullying and isolation. Have any of these issues come up with a person you work with/support?
Time-to-talk ten: Peeters and Jordan (1999) finish their article with the following words: "Amor NON vincit omnia. Autism is different". (Love does NOT conquer all). In your own words, comment on what you understand by this statement in the context of the article and whether you agree with it. Do you agree with the notion that carers and practitioners in the field of ASDs need to have characteristics that make them 'qualitatively different'?
Time-to-talk thirteen: Comment on how you think the eclectic approach at the school may have helped James. Do you use a variety of approaches with the person with an ASD whom you care for or work with?
Time-to-talk sixteen: Comment on whether you think things have changed since the NAS (National Autistic Society) report was published in 1999. Are there more support mechanisms in place for parents? Indicate whether you feel that mutual support and partnership between parents and practitioners have made a difference to how you have met the needs of an individual with an ASD.

9.4. Findings: Interaction patterns

It is clear that purely measuring the number of posts would give limited insight into discussions so this was complemented by examining distributions patterns of postings according to interaction analysis of turns and also whether

postings could be characterised as monologues, responses or re-initiates (see figure thirty two). In continuing to look for indicators of deeper engagement as described in chapter six, the previous coding instrument was thus adapted further by coding all the postings according to whether the post was a descriptive monologue, a response to a previous posting, or a re-initiating turn thereby enabling focus on the distribution of different types of discourse. This is a slight adaptation of the approach described in chapter six, with the only difference being that a distinction is made between a 'descriptive monologue' and a response. The distinction was made because the data highlighted that the categories needed to be split in this way. Due to the nature of Time-to-talk discussion there was a distinction between students answering a question posed in a way which could almost have been their own private reply to the question, and students answering the question in a way which indicated they were responding to either the question or another student, but it was clear that the response fitted into a dialogic structure.

The dictionary definition of a monologue states that it is 'a long speech made by one actor in a play, film etc, especially when alone or 'any long speech by one person, especially when interfering with conversation'. It is thus characterised as a posting that can potentially appear alone rather than as part of a dialogue. It does not appear to be part of a dialogue in that it does not readily invite further contribution from others. The response, on the other hand is to 'state or utter something in reply'. In this context, it represents a posting whereby the student is commenting on another students' contribution but is not

necessarily opening up the discussion for further contributions by others by asking a question to the group or individuals or raising another issue for discussion. A ‘re-initiate’ posting on the other hand is one where the student ‘begins or originates again’ so the student is responding to the question and to other students whilst raising a slightly different point and then opening that up for discussion by the use of a question. Examples of the three types of postings are given below.

Figure 32: Examples of monologues, responses and re-initiates.

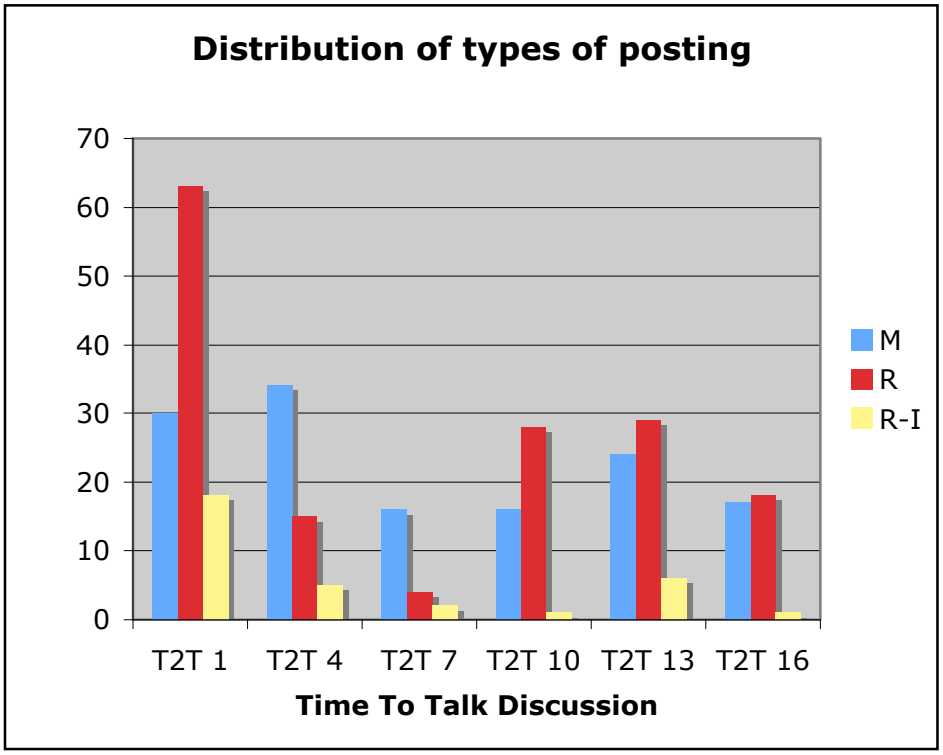
Monologue
Group C, Time-to-talk one, Linda: I work in a large special school, which has several classes for pupils who are diagnosed with an ASD. Without a diagnosis pupils cannot access this specialist provision and are placed in other provisions. We now have strict policy guidelines on staffing ratio and the staff work closely as team to maintain the ethos based around TEACCH, PECS and Intensive Interaction. We also have weekly Speech and Language Therapist (which other pupils in school access but in a more ad hoc manner than ours) Therefore the provision and resources for students with autism is in my own experience better than without a diagnosis. As a teacher I also feel better able to 'fight my pupils' corner' for resources by being able to say that a pupil needs this because he is autistic. I also believe that my parents have an opportunity to access support services that they might otherwise feel they couldn't or shouldn't or to which they might not be directed.
Response
Group A, Time-to-talk four, Elaine: I agree with Pat about the language and communication developing separately for those individuals with ASD. My son has good language but still needs help with the communication side. I write things down for him or use pictures with words and also he will write down stuff especially if he is anxious. I feel this helps him to understand more of what is happening at that moment.
Re-initiate
Group A, Time-to-talk four, Maria: Where you mention looking through a window and still being able to judge the tone of the conversation reminds me of the clip on video of Marit Jonsen speaking in Norwegian. When I first listened and watched I could tell it was instructions but could only guess at one word "book". I knew she was giving instructions from the tone of voice and the spacing between sentences, but could not work out what the

instructions were for. On the second clip where she used hand and body gestures I could see that it was some kind of bedtime routine and worked out that you needed to brush your teeth, read a book, have a drink, and go to bed. It wasn't until she used the symbols that I realised it was bath, brush teeth, have a story, have a bottle, and go to sleep, and that this related to a baby. It has really made me think about how my R must find it so confusing at times when just language is used and especially when she might be anxious due to sensory difficulties. I believe it will be most beneficial to use symbols at certain times as an aid to helping her understand. After all we are speaking a kind of foreign language to her, and even if she can pick out a few words the meaning may still be lost to her. What do other people think?

The discussions were characterised by the largest proportion of messages being either monologues or responses (see figure thirty-three). In fact, in all three groups those two different types of messages accounted for between sixty-seven and ninety-eight percent of the messages in each discussion so there were not many examples of re-initiates. The first discussion had a higher number of responses and re initiating moves across all groups. Time-to-talk ten had a lower number of 'monologues' and higher number of 'responses' in all three groups, indicating that students were responding to one another but the discussion was lacking in re-initiating moves in those discussions. Time-to-talk sixteen showed similar patterns although this discussion was characterised by proportionally higher levels of monologues. Time-to-talk four was particularly characterised by a high number of monologues, certainly in two of the groups. This discussion read more like a series of individual reflective contributions than a discussion but could be important to students who appreciated the opportunity to share these reflections and felt they learnt from them. This discussion asked students to observe someone for five minutes and then to write down their observations. Time-to-talk thirteen showed a more even balance, with some reinitiating moves

in two of the groups (see figure thirty-four). The findings from this are interesting in that there are consistent patterns across all three groups, with certain questions resulting in similar patterns of posting across all groups.

Figure 33: Different types of postings across all three groups: Monologue (M), Response (R) and Re-Initiate (R-I).



These findings needed to be explored in more detail in order to understand what these results might tell us. The two most striking results in terms of the balance of types of postings were Time-to-talk one and Time-to-talk four (see figure thirty-three above); the first has a proportionally high number of responses and the second has a proportionally high number of descriptive monologues. Given these findings, I was interested in selecting these two discussions for more detailed qualitative analysis.

9.5. Findings: Discussion content in Time-to-talk

We see from figure thirty three twelve that Time-to-talk one has the highest number of postings in all groups and that this discussion also shows a higher number of responses and re-initiates across the three groups so I decided to undertake more detailed reading of those discussions across all three groups. This was undertaken in order to try to get a deeper sense of how the discussions developed across the groups. I intersperse my own comments with examples from the data in italics.

There was strong consensus in all three groups that diagnosis was considered important (with only three postings slightly disagreeing).

> *I have to say that I agree with everything that you have both said. Without diagnosis there may seem to be no understanding of your child, no way of explaining their behaviour or getting access to the specialist help that they so desperately need. I work in a Nursery attached to a special school.*

The students commented on the issue from their own experience and perspective, often alluding to the setting in which they were in and where they were located.

> *From a parent's point of view I think diagnosis is essential to ensure children receive the right help from the various agencies.*
>
> *However my nephew was diagnosed with AS last year and it has made a huge difference to him and the whole family. My nephew is now getting the support and education he needs. I would like to agree with what has been said that diagnosis is very important, we have quite a few children at school who are showing all symptoms of ASD but have never been diagnosed. And even when diagnosed there is little help for them in a mainstream comprehensive school unless there is support provided for the child, parents and teaching staff.*

Students used examples from their own context to highlight why they believe it is important for a person to have a diagnosis so the question could be seen to be useful in terms of giving students the possibility to talk to one another about the settings in which they are based, thereby also to disclose further information about themselves. The question therefore also had a socialising function in an indirect and probably unintended way in that it opened up for students to talk about themselves.

> *I work in a large special school that has several classes for pupils who are diagnosed with an ASD. Without a diagnosis pupils cannot access this specialist provision.*
>
> *I work in an FE college with adults with ASD and learning disabilities.*
>
> *I work with adults with ASD and see that sometimes the individual is aware that they are 'different' but sometimes are unaware that, or maybe don't care, that they have special difficulties. I think that the sooner an individual can get the help and support that will help them to cope, the better. This will also help them when they are adults, to cope with their own feelings. I don't like 'labelling' people, as it focuses on only one part of the individual and we are all people and all have our own weaknesses and strengths that should be taken into account.*

Students also explore the issue of early versus late diagnosis and how that might impact on the individual; how diagnosis can enable access to services and can help people understand the individual with ASD better. In addition they also discuss how the person with an ASD might perceive their diagnosis.

They discuss effects on the family, siblings, and the person with an ASD. There is strong consensus on the issue of diagnosis across the three groups, with all postings apart from three agreeing that diagnosis is important. Examples

of disagreements are for example when one student in group H highlights that she thinks diagnosis can also be a hindrance and she qualifies why this is the case. This leads to a discussion of five postings in which students respond, leading to more nuanced discussion of this issue. An extract from a posting is shown below.

> *After much consideration about the boys that I support, I would have to say that I am inclined to say that although I believe that a diagnosis is vital, it could well be a hindrance as well. One of the boys I work with knows that he has been diagnosed and works very hard to hide his disability in school from the other children. However he is very good at using his "label" when he wants to as well. He is also lucky that he has had his diagnosis explained to him very carefully by two loving parents. The other side to my views though is that the diagnosis could be harmful to a child. If they hear that they are being "labelled" they may become withdrawn and depressed, especially if they haven't had it clearly explained to them. I hope that this makes sense to everyone, look forward to reading more of your views.*

We can see here that this relatively simple question resulted in having a number of functions in terms of the type of discussion it generated: it enabled students to express opinions, to share information about themselves, to comment on the issue from a number of perspectives and to relate their postings to the person with an ASD whom they care for or work with. As was highlighted in chapter seven, the higher number of postings in Time-to-talk one and the interaction pattern of contributions might be explained in part by the fact that students are asked to give their opinion on an issue that they seemed to have clear opinions on, there were shared conceptions amongst the groups on this issue and most students could back up their opinions on this issue by stating how

they saw it from their perspective. Analysis of the discussion also found that students readily responded to one another by commenting on one another's experience and perspective and this would also often open up for further response and re-initiate turns from other students.

On further examination of the interaction pattern and the length of posting in the first ten posts of Time-to-talk one in the modal group, we also find a pattern whereby this question shows a fairly even match (in length of post) between initial and responding messages and chains of interaction in which themes and responses were in turn responded to. This point can be illustrated by examining a sample of a string of postings. The figure below shows an extract from Time-to-talk one in the highest posting group. This sample show that there are two descriptive monologues and these are not significantly longer than the other types of statements. The longest statement is a response initiate (R-I) statement, which leads to an interaction pattern of two responses followed by another re-initiate.

Table 14: Interaction patterns in a sample of a chain of ten postings in T2T 1 in group H.

Statement	**DM**	**DM**	**R**	**RI**	**R**	**R**	**RI**	**R**	**R**
Word Count	124	67	165	351	286	99	115	171	211

In contrast to Time-to-talk one, Time-to-talk four, on the other hand seems to have resulted in a very different type of discussion as a result of the nature of

the task students have been given. Here students were asked to go out and observe someone and write down their observations of someone's non-verbal aspects of communication. On detailed analysis of these discussions across all three groups, we find that the students post their observations but the postings are largely descriptive monologues in that they do not readily open up for others to comment on them or to enable dialogue:

> *I observed an adult with learning disabilities sitting having coffee with other students in a kitchen before they started a cookery session. She used both verbal and non-verbal communication. Her speech is sometimes difficult to understand and at times she would also point at items to make sure others had understood. She was also very interested in what others had to say and would follow people with her eyes as they talked or moved around. She obviously enjoyed communicating with others and would initiate conversations, again often pointing to items to make sure she was understood. She would also smile at people and looked directly at people when they were talking to her. It is interesting to observe this because this lady is popular with all members of staff because of her friendly nature and I feel her good communication skills.*

Despite there being higher numbers of monologues, students, as can be seen from the postings below, comment on what they have learnt from this exercise in terms of making them think and look at things from a different perspective.

> *As part of this section concerned pre-linguistic skills and how vital these were as foundations for the development of communication I observed my daughter who is sixteen months old interacting with my mum. They were looking at pictures in her favourite book, as mum said the name of each animal she would point to the picture of the animal in the book and make the sound or the gesture/facial expression she had learned from mum for that particular animal. She was joint referencing by looking at mum, giving eye contact whilst pointing to the animal showing that they were sharing the same experience. She clapped and smiled when she recognised*

from mum's response that she had given the correct answer. She also showed a facial expression of shock when she looked at the picture of the spider, something that she had learned from mum. At the end of the book she pointed to her toy car to indicate that she had finished and wanted to play with the car, once she sat on the car she then pointed to mum and communicated that she wanted the car to be pushed. It was an interesting exercise as it helped me to re-examine this area looking at it from a different perspective.

This discussion again shows that students use examples from their own lives when responding to the question and give information about their own circumstances. The discussion may therefore not have the character of lively debate but nevertheless may be important in terms of developing reflective abilities in the students.

I observed my nine-year-old daughter and her friend playing with her dolls, Bratz (Barbie dolls with attitude). There was a lot of role-play and turn taking. When their 'scene' had finished they decided what was to come next, they discussed it between themselves, taking turns and listening, giving eye contact, though one was a little more assertive that the other. The volume became raised when they were deciding which doll was the best. They were both animated and interested in what the other had to say and there were lots of girly gestures. It was obvious that they were best friends. At the end one of them said something funny and they were leaning on one another and giggling and laughing. It was a pleasure to watch.

The nature of these postings can partly be explained as a result of the nature of the question itself. In asking the students to conduct an observation of which the other in the group were not privy, and then asking students to post what they had seen, the nature of the task itself probably contributed to students being unable to comment on one another's contributions.

In these discussions, the postings tend also to be longer and there is a different interaction pattern than in Time-to-talk one. The Time-to-talk four

distribution patterns in a sample of group L discussion, shows the following pattern:

Table 15: Interaction patterns and word counts in a sample of a chain of ten postings in time to talk four in group L.

Statements	DM	R	DM	R	DM	RI	DM	DM	R
Word Counts	333	185	546	59	234	126	188	257	90

Here we see a clear pattern in which the descriptive monologues are longer in word count than the other posts. This discussion also has a higher number of descriptive monologues than Time-to-talk one. The average word count for this sample is two hundred and twenty-four whereas the average word count for the sample from Time-to-talk one is one hundred and seventy-six. This raises the question as to whether there is a correlation between word counts and interaction patterns. Although more detailed analysis of interaction patterns in further samples do indicate that this is the case, this needs to be treated in a tentative fashion as we cannot draw the conclusion that large word counts lead to less interaction or that smaller word counts lead to more interaction as the correlation in these samples could be related to a number of issues including the nature of the task and the personalities of the individuals in the group amongst other things.

9.6. Findings: Topic Adherence

One concern in this model of facilitation could be with whether students adhere to the topic set; whether a situation in which the tutor stands back and

allows the student to explore a topic themselves leads to the discussion moving off topic more than if there is a 'strong chair' there to move it back. We can see from the number of postings and the nature of the discussions that this is a committed student group where most students participated if not all the time, then at least most of the time. Analysis of the discussions also shows that students largely adhered to the topic and focused on answering the question set (see table fifteen below).

Table 16: Total number of posts and postings adhering to topic.

Group L

	Total Number of Posts	Posting adhering to topic
Time-to-talk 1	27	23
Time-to-talk 4	18	9
Time-to-talk 7	12	10
Time-to-talk 10	19	10

Group H

	Total Number of Posts	Posting adhering to topic
Time-to-talk 1	48	45
Time-to-talk 4	32	22
Time-to-talk 7	19	15
Time-to-talk 10	29	22

Group M

	Total Number of Posts	Posting adhering to topic
Time-to-talk 1	58	40

Time-to-talk 4	14	10
Time-to-talk 7	10	8
Time-to-talk 10	11	11

In terms of topic adherence, if we take the example of the discussion on diagnosis first, we see that the modal group largely adhere to the topic set. When the students move off topic, it is to make comments related to tutorial arrangements. Other slight movements off topics include a short sub-discussion about the issue of learning mentors in school, the different diagnostic instruments in existence, and the issue of statements and how this relates to diagnosis. There is also an extension of the discussion by students having two separate 'sub discussions' firstly around some reading material in the module reader on a group for people with Asperger syndrome in Sweden (two posts) and secondly, a discussion about the relation between theory and practice (five posts) here pursuing an issue that had arisen from their reading.

Time-to-talk four, on the other hand, stands out as a topic in which students are least likely to adhere to topic. This could again be related to the nature of the task, which asks students to do something very specific. Once they have undertaken that task, students who want to engage further in the discussion will find it difficult to do so without moving off topic. For example, on further analysis of the ten postings that did not strictly adhere to task in group H, these actually commented more broadly on issues related to the task. This included picking up on something someone else had picked up on when undertaking the task:

> *This observation sounds fascinating. I haven't yet done an observation, but I hope that mine's as interesting as this one. Were*

you involved in this conversation or just watching? It sounds, like you said, to link with the idiosyncrasies that are prevalent in the world of autism, but when I think about it a lot of people can be like this. When in a group discussion and people are talking about things which you do not understand, know about or have an interest in, you switch off, feel slightly uncomfortable as you don't quite understand it or know what to say, or just don't feel you have much to say on the subject. But given the opportunity to talk about something you do understand or like you can talk on it forever and don't want the subject to turn back to one where you just 'switch off.'

The findings from both qualitative analysis of the discussions and the interaction analysis above, show us that the nature of the task clearly influences interaction patterns across all three groups, with some questions leading to greater interaction than others and some questions leading to greater adherence to topic than others. Nystrand, Gamoran, Kachur, and Prendergast (1997) analysed factors associated with occurrence of classroom dialogue in which students took an active and sustained part in discussing ideas and they called these 'dialogic spells'. They found that teachers could break the monologic mould of classroom talk by the use of certain strategies. These strategies include actively welcoming and soliciting students ideas, following up students responses in their next remarks, asking questions that do not have pre-determined answers and deliberately refraining from making the kind of evaluative feedback comment that teachers typically provide after a students contribution (and perhaps encouraging students to make such an evaluative follow up themselves). This is a useful framework within which to examine the role of the tutor in the WebAutism programme so we can develop a more all rounded perspective of how the nature of the question and the role of the tutor might interact to lead to certain discussion outcomes.

9.7. Findings: The role of the tutor

In designing the learning environment and allocating roles, WebAutism tutors had wanted students to 'forget' the eyes of the tutor and have opportunity to develop discussion skills necessary to reflective practice. Tutors wanted these to happen naturally between students without inhibition generated by active tutor participation hence the non- interventionist approach. This approach was predicated on the need for highly structured tasks so that students would know what was expected of them and on topics that would encourage participation because students were sufficiently prepared for them and because they related to their practice and level of expertise. Tutors were expected to monitor discussion to provide a check that students were interpreting the task correctly, engaging with it and contributing productively. Moreover, at the close of discussion, the tutor summary was expected to provide formative feedback – an opportunity for the tutor to review and comment on student contributions in constructive ways. The summary gives the students an overview of the discussion, enabling them to step back from their own intervention in it and reflect on what has emerged from it both in terms of content of the discussion and their own learning/skill development.

The first aspect of the tutor role was a welcoming and affirming one. Tutors were encouraged, in the first module, to support and reassure students by addressing them by name and giving them positive feedback thereby helping them to feel that their contribution was valued. There are many examples of encouragement and positive feedback during the discussions. In subsequent

dialogues tutors do not generally intervene in the discussion after the initial posting of the discussion topic until summarising at the end. After the first three discussions, we found very few examples of the tutor intervening in this way. Tutors still showed evidence of affirming students but mainly through the summaries (see figure thirty-four).

Figure 34: Giving formative feedback or reassure/empathise with students.

Edward	*As a first 'run at it' this was a lively and committed discussion. Just a word of encouragement to any students who did not venture on-line this time. It really is a valuable way to exchange thoughts - and, as East Anglia is paired with a Scottish Tutor Group an excellent chance to explore the different laws and traditions of education and care in the two Countries.*
Claire	*Welcome to a new term's Time-to-talk. Hi Katie, good to see your message! Welcome. Hope to see you soon at our first face-to-face. Cheers Claire.*
Edward	*Thank you for your participation in the exchange of ideas, any courteous challenges made and the reflection on your own and others viewpoints.*
Claire	*Hi Elaine. Welcome. Hope to see you soon at our first face-to-face tutorial. Cheers, Claire.*
Fiona	*Hi Katie, good to see your message! Have you found the messages on my bulletin board yet? Hope you are able to come to the tutorial on Monday, please let me know either way! Cheers, Fiona.*

Figure 35: Extract showing affirmation of students through tutor summary

Tutor Summary: Fiona	*This discussion was emotional and generated very interesting ideas. Many of you found the reading of C. Sainsbury's account of the effects of bullying upsetting. For some of you this reading brought back unpleasant memories of your own experience (of being bullied at school). I could feel the frustration you experienced while writing about lack of understanding and support in mainstream schools that sometimes made the school life of children with ASD miserable and confusing.*

We also see the tutors taking on the roles of instructing and modelling behaviour. The tutors' main influence was through summary writing and they did not therefore directly influence the development or flow of the discussion. Tutors varied in how much they used the summary to comment on the ways in which the discussion itself developed. In early discussions tutors were more likely to name particular individuals as having raised themes, thus giving personal affirming feedback (see figure thirty-six). In later discussions, tutors focused more on synthesis of content themes and on the discussion as a whole rather than on establishing relationships with students through individual validation. One tutor commented on how this was deliberate, consciously shifting the role of the summary away from giving reassurance and individual feedback toward modelling what they regard as a good summary.

Figure 36: Explaining the role of tutor as T2Ts progress

Edward	*The way that Time-to-talk works is that each discussion has a set period, at the end of which one or other tutor will summarise the arguments advanced and the points made. It is good practice to mention how contributors came into the discussion; but, of course, it is not the object of the exercise to repeat in full exactly what anyone said. The summaries in this first term will largely seek to be factual and the tutor will refrain from comment. At the end of each, however, there may be an idea from your tutors that may spark a thought or two; to be stored in the back of the mind and to be brought out again as the programme progresses. Time-to-Talks are, in that sense, cumulative and build on one another.*
Edward	*With the experience of two portfolios behind us we are moving into a developed manner of summarising the discussion on the web. This is taking a step towards the skill of distilling the essence of a discussion (as it might be, a seminar in the full time academic course) and presenting this as the basis for further thought and dialogue. The tutors may throw in some ideas for consideration (growing from what has been said - this is your forum not ours). You will note that there is less emphasis, now, on what each individual contributed. This is not to downgrade anyone's contribution; and never think that. It is, rather, that the 'argument' (that is the central core of what has been said) is the focus: and a summariser may pick out a phrase here and there, which has particularly acted as a stimulus to thought, whilst still holding together the gist of the discussion. I hope I can illustrate this by my summary of the current discussion; which was lively, in-depth and largely consensual.*

A fourth aspect of the tutor role was intervening in discussions when needed. This did not happen often but tutors did intervene in certain instances. One was when the tutor had to answer a direct question from a student. Another was when the tutor felt the need to remind students that posting messages and participating in dialogue was a requirement of the course. The third instance was when the tutor needed to curb students' enthusiasm when they started a subject

matter too early. One tutor also felt the need to remind students about how to compose messages in a way that would aid subject flow.

Figure 37: Examples of tutor intervention to keep the discussion on track.

Claire	*This is perfect Pat. It is up to each student to decide whom they want to focus on. I better get off and not interrupt the flow of chat. Thanks, Claire.*
Claire	*Please stop posting! Can you please wait till the proposed time to post as this Time-to-talk is part of Module two, which does not begin till after your completion of your portfolios. Thanks, Claire.*
Fiona	*Can I just remind you that posting is a requirement of the course and I am happy to say that there always seems to be plenty of postings with this group. I hope this level of enthusiasm can be maintained as this helps with the portfolios at the end of term. I would also welcome 'gentle challenging' as a means of assisting with personal reflection and 'lively debate'. Fiona.*
Claire	*Hi everyone, Hopefully by now you will have all contributed to Time-to-talk sessions. Can we try to facilitate the cohesive flow of the postings to subject headings? If you want to introduce a new concept or discussion then the process to follow is 'compose message' - make your title, compose your message and post. If you are following a theme, reflecting on a point made by someone else, whether your in agreement or in disagreement then please compose your posting by pressing 'reply' and this will follow on from previous message (threading).*

	Threading helps when you come to review postings for your synopsis. I hope this helps. 'Happy discussion', Claire.

Tutors also showed evidence of challenging and giving feedback. This was often done in a subtle and supportive way, clearly making students feel that their contributions had been noted and were valued (see figure thirty-eight).

Figure 38: Tutor modelling own expertise or skill as a practitioner, teacher, or critical discussant.

Edward	*Yesterday I was attending a one-day conference on autism. It was interesting, in coming to your Time-to-talk threads, to note the convergence of ideas between those and what was set out in the Conference. One theme, strongly put across, coincided with Linda's that there is a common need for child-sensitive education, individually focused (Carol, Su, Sylvia, Beverley) that goes way beyond ASD. Broadly speaking, if a method has advantages for a child with ASD, then it can illuminate aspects of education for all children. The term "eclectic" was not defined in this presentation from the web-team: rather it was illustrated (by a child and a school setting) and the topic set was to talk about the effectiveness of this. In fact, effectiveness was assumed by all contributors, almost as a 'given'; provided (and here's the nub of the matter) the context established that "opposing strategies and differing philosophies (are) managed effectively" (Karan). So the argument was not set in terms of whether this or that 'system' was effective per se, but, properly, in terms of whether it had been adapted to fit the needs of child, setting and family. To be able to bring together these element 'effectively', there is a need to acquire a knowledge base about the said underlying philosophy and methodological "strategy' of many (if not, indeed, all) of the offered systems (Anna). It is now time to pass on to the next topic area, which I hope will be as equally stimulating. After this evening this topic area will close.*

9.8. Discussion

This chapter has taken note of McConnells (1994) call to conduct more research in real settings where participants use the medium for important, meaningful and purposeful reasons. From analysis of a real-life learning situation the challenge has been to find out what tutors do and why (Oliver, 2006) and to look at the impact of the management and selection of tasks, discussion groups and topics together with tutor interventions on subsequent discussion outcomes.

Decisions about the type of questions to ask students and how to encourage cognitive, reflective or interactive skills through the use of questioning, need to be made in the context of specific learning environments and should be set with the particular student group in mind. We see in this research that students largely adhere to topic. The pedagogical advantages of online collaborative learning are well known and concur with Macdonald's research (Macdonald, 2003), which highlights that integration of collaborative learning and hence also dialogue within the course will radically influence its uptake. In this programme, discussion questions are carefully integrated with online presentations and reading material, and this is likely to affect adherence to topic.

An important role of the teacher is to set tasks and questions that will generate discussion in line with the aims of the programme. In WebAutism, the questions were aligned with the learning outcomes of the programme, as the focus was on developing reflective, team-working and problem-solving skills in the students whose background necessitates an empathetic and reflective stance. Programme tutors recognised that the students on this programme

usually arrived with a strong need to talk about their experiences and that the opportunity to talk about experiences was likely to lead to the development of confidence and motivation. The pedagogical considerations of the programme had applied the concept of 'scaffolding' (Bruner, 1983) to the nature of the questions set. The aim was to 'scaffold' the students through their assessed work (and this was mirrored in Time-to-talk questions) from being given opportunities to comment on their experience, through to being able to argue something from one point of view to finally commenting in a more balanced way looking at a variety of points of view. We see through the data that the students are comfortable with the first two stages but are still reticent to reach that third stage of criticality. This is an issue that WebAutism tutors can address in that there may need to be more careful thought attached to moving students from the notion of commenting on experience to arguing something from a more balanced point of view, in order to express criticality and disagreement.

The findings highlight the need for programme tutors generally to think carefully about the pedagogical considerations of their programmes and to consider the types of questions that need to be posed in terms of meeting the relevant learning outcomes. This chapter highlights the importance of creating a safe environment for students and that one way to do this can be to focus on the types of questions asked at different stages of a programme. It may be valuable at early stages to ask questions that encourage engagement on a social, personal and reflective level but then gradually introduce more cognitive demand as students progress throughout the programme. This can be particularly so for

undergraduate students who have little experience of studying in Higher Education and need to develop confidence and practice online before being expected to engage in more cognitively demanding tasks.

Alexander (2000), in his research of classroom dialogue across five different countries, found that teachers organise their communicative processes in different ways. His research found that the most successful dialogic teaching came from situations in which the teacher uses talk to provide a cumulative, continuing, and contextual frame to enable students' involvement with the new knowledge they are encountering. Within this framework, he found that it was important for students to structure questions to provoke thoughtful answers, that answers should provoke further questions and that these were seen as building blocks of dialogue. Students were given opportunity and encouragement to question, state points of view and comment on ideas and issues that arise out of lessons. Some research has found that complex interactions tended to happen when the question was specific or it was a concept covered in a course reader and that discussions would fail if questions were too broad and open (Fung, 2004).

The analysis of this chapter found that the issue was not so much whether the question was broad or focused but was related to the way in which students were asked to comment on experience. If questions were too directly related to personal experience, then they tended to result in longer more monologue type contributions that tended to close discussion down. When reflecting on practice more generally and less personally, there were shorter contributions, which had

more interactive nature and the character of lively debate. This was particularly true if the question encouraged students to reflect on a particular concrete case or personal experience but then asked them to express an opinion on a specific issue. Questions that were more open in asking students simply to raise issues in general that emerged for them may be less successful in generating debate.

The interaction analysis found differentiation in the types of exchanges generated by different questions and this may be of interest to course designers in general. If we look at the relationship between structure and form, it has been argued (Kneser et al., 2002; Pilkington, 2003) that reinitiating forms tend to open up discussion for further elaboration and refinement whilst responses and their complements tend to be informative or provide feedback but close discussion down. Thus, the clarification and challenge occupying the re-initiating position within discussion can be an indicator of deeper engagement with each other's contributions. Less interactive discussions may be characterised by an initiating question (often posed by the tutor) with a series of informative replies by different respondents or the conversationally ill-formed initiate-initiate sequence where one person provides an informative comment followed by another unrelated informative comment (typical monologue).

This seems to be the case in this research and it is important to look at context to understand why this may be so. WebAutism is a CPD course with a focus upon reflection and practice. This particular context, coupled with the needs of the student group, means that the programme is focused upon developing reflective abilities and confidence about practice. It is in this context that we found that the online exchanges described here have tended more towards descriptions of personal experience than well-supported, subject-related reasoning. This leads to the conclusion that whilst it can be difficult to know how to evaluate the learning experience within VLEs, evaluating the extent to which interaction occurs or the syntax of interaction without also considering its semantic content is not enough particularly given that reflection is an important skill and process to develop (Gibson, et al., 2006). We therefore need to develop other methods of analysis that allow us to measure not only the quality of interaction but the extent to which reflective abilities are developing.

In this programme, the role of the tutor is in some ways not significantly different from other e-moderator environments in that the tutor role is to open the discussion, to help motivate learners, to encourage students to talk and share, and to highlight when it is time to move to the next discussion. Yet, the moderation role is also very different. This research shows that it is possible to enable discussion whilst giving the tutor a less interventionist role than we would normally expect the e-moderator to take on. Traditionally, the e-moderator role is based on the premise that the tutor should take control of the learning situation (Salmon, 2002). This entails a leadership role in which the tutor takes control

over many aspects of the discussion. Here we see that it is possible for tutors to retain this type of role whilst also taking a less interventionist role than is often expected. One reason as to why that may work in this environment is that WebAutism is so carefully structured, with the online discussions being coherently integrated with the course material itself. There is a supportive structure for students to intervene within, with very clear expectations attached to it. The learning environment itself is therefore designed in a way that gives students clarity about how to conduct group work within it. This in turn allows for the creation of a different role for the tutor. The supportive structure, coupled with the notion of the tutor as an 'enabling participant', leads to a focus on the student group itself and participants' belonging to that and it moves students away from the perspective of tutor as 'expert' or as someone who might have all the answers. This seems particularly important in a programme that is about enabling people to become more reflective and is also about enabling students to rely on their own judgement and reflect on the consequences of their decisions in order to improve their practice.

9.9. Summary

This chapter looked in detail at the role of the tutor and how the tutor facilitates productive outcomes. The chapter covered two aspects of this role and these include (i) the selection of the topic of discussion (the discussion question) by the programme team and how this influences the quality of the discussion; (ii) the interventions of the tutor within the online discussion. Discussion questions were aligned with the aims of the programme, in that the focus was on the

development of reflection, teamwork and problem solving and giving students opportunity to talk about their experiences. The findings showed us that the nature of the task clearly influenced interaction patterns across all three groups, with some questions leading to greater interaction than others and some questions leading to greater adherence to topic than others. The analysis of this chapter found that interaction patterns were influenced by the extent to which students had opportunity to comment on experience. If questions were too directly related to personal experience, they tended to result in longer more monologue type contributions that tended to close discussion down. When reflecting on practice more generally and less personally, there were shorter contributions, which had more interactive nature and the character of lively debate. This was particularly true if the question encouraged students to reflect on a particular concrete case or personal experience but then asked them to express an opinion on a specific issue.

In this programme, the role of the tutor is in some ways not significantly different from other e-moderator environments in that the tutor role is to open the discussion, to help motivate learners, to encourage students to talk and share, and to highlight when it is time to move to the next discussion. Yet, the moderation role is also very different. The facilitation model shows that the tutor can play a less interventionist role than we normally expect the e-moderator to take on. Normally the tutor takes control and directly shapes discussions (Salmon, 2002). In this facilitation model, students work within a supportive structure in which they are encouraged to communicate with one another and to

shape their own discussion. This shifts the tutor role to a more preparatory and plenary role.

The findings demonstrate that the online discussion medium can enrich the learning experience of the students and that online dialogue can be a powerful medium for the transmission of values. This is an environment in which students plan and consider their responses, which then become permanent records to refer to and reflect on. It shows the unique value of the online discussion board, provided one puts careful thought into how the medium is used. The discussions showed strong evidence of the development of reflection in students.

CHAPTER TEN: META-ANALYSIS

10.1. Introduction

This chapter pulls together key findings from this research by undertaking a general or meta-level discussion across chapters that relates to what has been discovered. Given that one of the aims of the study was to develop insight into 'what works' and thus provide an evidence base for practice, the chapter summarises key findings and explores the implications for these for practitioners and researchers. These are explored on a number of levels, including for the WebAutism programme itself, and in general for training in both the field of ASD and beyond. The chapter also discusses the implications of these findings for the use of online discussions and their role in the development of a community of practice in learning and teaching in Higher Education, highlighting the strengths of the medium of the online asynchronous discussion board in enabling the development of reflective practice. This chapter also explores the fact that students form both a learning community and a community of practice. This has pedagogical implications for learning and teaching and on the roles of learners and teachers. Furthermore, implications for researchers are discussed. The chapter ends with outlining possible future research and discusses the limitations of the study before moving on to highlighting how the research will be disseminated.

The introduction to this thesis highlighted its dual focus, which on the one hand relates to good practice in the field of training ASD carers and practitioners. On the other hand, it is about analysing how online discussions can contribute to learning. Given that I have not found any other studies that investigate how ASD practitioners learn through online dialogue on a blended e-learning programme, the challenge of this research has been to bring these two separate areas of study together in a way that allows a synthesis and a proposal of a model through which they can be investigated. This research was an ethnographic case study that used the theoretical tools of socio cultural and activity theory and communities of practice to attempt to understand the multifarious phenomena that constitute WebAutism. The focus was on productive learning and in particular on the role of online discussions in enabling ASD practitioners to develop as reflective practitioners.

The structure of the study was based upon conducting a macro-analysis related to the socio cultural context in which learning takes place, a meso-analysis of WebAutism as a learning zone (Engestrom, 1987) and micro-analysis which focuses on group interactions (Edwards & D'Arcy, 2004). Analysis of the macro level focused upon exploration of what stakeholders perceive to be the necessary skills and competencies of the ASD carer or practitioner. This lead to a meso level analysis that examined how acquisition of these skills and competencies can be facilitated through pedagogical design and learning activity and ending with a micro level analysis of activity within the online bulletin board discussion, exploring how these skills and competencies are expressed through

online discussion. The thesis explored analysis of the organisation of the learning environment and the connections between learners and other learners, between learners and tutors and between learners and resources. This has included trying to understand how activity is influenced by the instruments used, the community that the students belong to, and the kind of collaboration going on in the community, guided through rules and division of labour (Engestrom, 1987). This chapter is structured round first summarising the findings from the main research questions (see table 1). After this, implications, limitations and dissemination are outlined.

Table 1. The Research Questions

The Macro level
1. What are the skills and competencies that reflect what is considered to be good practice in the field of ASD? (Chapter 3)
2. Who are the students on this programme and how are they located in the field? (Chapter 3)
The Meso level
3. How is the programme designed to meet the learning needs of students and how do students refer to their developing knowledge, skills and competencies through the module evaluation process and assessments? (Chapter 4)
4. How do the different activity systems come together in the creation of the programme and what are the constraints and tensions involved in the process of designing and maintaining the learning environment? (Chapter 5)
The Micro level
6. How do learners appropriate the professional discourse, values and goals of the ASD carer (one measure of learning to be a practitioner in this context) and what kind of collaborative engagement do students show with each other's contributions (another aspect of learning to be a practitioner in this context)? (Chapter 7)
7. How do students move from peripheral membership to assembling ideas about

community values and what it means to be a member? (Chapter 8)
8. How are online discussions influenced firstly by the selection of the topic of discussion (the discussion question) and secondly by the interventions of the tutor within the online discussion? (Chapter 9)

10.2. Research questions and findings: the macro level

1. What are the skills and competencies that reflect what is considered to be good practice in the field of ASD? 2. Who are the students on this programme and how are they located in the field?

These research questions were first addressed by undertaking a literature review of good practice in the field of ASD, with a focus on highlighting how the field developed notions of good autism practice. The review focused primarily on government reports, and on research reports that identified current understandings of what constitutes good autism practice. After conducting this literature review, the research drew on data from a questionnaire sent to all students and which focused on eliciting information on the demography, learning experiences and learning needs of the students. This data gave also gave important information about the settings in which students were located and their diverse backgrounds.

With reference to the first research question, The ASD field of practice in the UK has in recent years developed a body of knowledge that represents the field and which all those who care for or work with someone with an ASD should be encouraged to develop. A secondary analysis of government reports highlighted

that, in the UK, there is a consensus on what constitutes good practice in the field of ASD (Mackay and Dunlop, 2004; DfES, 2001a). Although there is recognition that the needs of children, young people and adults are diverse, that no single strategy is likely to be right for everyone and that knowledge and skills need to be adapted to a particular individual and situation, there is also consensus that certain underlying knowledge and skills are needed in the field, regardless of the nature of settings and professions. One essential requirement is that practitioners need to develop knowledge about the triad of impairment, of sensory difficulties and of theories that highlight the difficulties people with ASD face. This includes being able to have empathy with the needs of particular individuals with an ASD (DfES, 2002). The field also recognises that practitioners in this area need to develop a broader set of competencies and skills that encompass knowledge about diagnostic criteria, psychological functioning, strategies, interventions and multi-agency work (FREDA and Jones, 2006). Within each of the above areas, measurement of knowledge and skills needs to relate to how the practitioner uses this knowledge and skills in their practical day-to-day understanding of the individual or in their knowledge of the processes they can use to apply this knowledge through assessment of needs (NIASA, 2003).

Furthermore, the reports highlight that practitioners need to develop understanding of i) principles of service organisation and management including good practice guidelines; ii) understanding of how the service addresses quality of life for the service user and iii) the need to know and understand alternative methods of adapting environments to take account of sensory difficulties (English

and Essex, 2001). Practitioners thus need to be able to apply understanding of good practice guidelines within multidisciplinary and team-working contexts, to apply knowledge to tailor programmes to meet the needs of the individual; and they need to be able to set clear developmental goals including evaluating and monitoring the ongoing need for specific adaptations dynamically over time. It is clear from the above that training programmes in the field of ASD need to encompass much more than the development of the analytical skills associated with academic learning, such as the ability to abstract and represent concepts formally, to generalise and to learn how to handle representation systems (Laurillard, 2002). Practitioners need to be able to locate their learning in their practice in the workplace and to develop their ability to care and support for the person with an ASD in the context of their everyday work or context.

In terms of assessing the extent to which the WebAutism programme meets the above defined 'curriculum' needs and with reference to the second research question, I first undertook an analysis of the demographic profile of the WebAutism students, so that this profile could provide information about the learning needs of the students and give some data about the settings in which the students were located. The questionnaire elicited information about the demography of the student group (where students were positioned in the field) and also collated information about their experience levels and learning profiles. Findings highlighted both the homogeneity and heterogeneity of the student group. In terms of the former, the majority of the student group were female (94%) and the student group were mature learners in terms of their age range,

with over half the students between the ages of forty and forty-nine. They were experienced carers and practitioners in the field, with the majority of students (82%) having between two and ten years experience as carers and practitioners in the field. In terms of the latter, they consisted of a mix of people working with adults (11%), people working with children (60%) and parents (27%). Furthermore, WebAutism students were drawn from a wide range of disciplines and services, with 41% of students working in mainstream provisions, 33% working in special provision and 11% in specialist ASD provision.

The student group was also diverse in terms of the prior educational experience levels of the student group, with 35% having prior Higher Education experience, and 30% with Further Education experience. Many of the students had previous experience of having undertaken ASD specific training, with 65% of students having undertaken in-service training, 66% having undertaken one-day training courses and 36% having undertaken 3-5 day raining courses, for example. Findings from the questionnaire show that these students studied the programme because they wanted to improve their knowledge and understanding (50%) or to become more effective practitioners (23%), with a majority feeling that the main benefits of the award would be that they would develop a greater ability to support the individual with an ASD. Given the high proportion of students who had undertaken prior training in the field of ASD, the students largely fell under the bracket of core or extension in terms of the training framework mentioned above.

10.3. Research questions and findings: the meso level

3. How is the programme designed to meet the learning needs of students and how do students refer to competencies through the module evaluation process and assessments? 4. How do the different activity systems come together in the creation of the programme and what are the constraints and tensions involved in the process of designing and maintaining the learning environment?

In order to answer the third research question on how the programme meets the needs of the students, the research scrutinised information about the pedagogy of the WebAutism programme. This included analysis of programme specifications, module evaluations, external examiner reports and a sample of assessed work. The researchers own experiential knowledge of the programme was also drawn upon here. This part of the study also included study of how the programme team worked together to create and deliver the programme, and the tensions involved in this.

The challenge of the WebAutism programme is to meet the needs of this diverse group of students in a way that encompasses the knowledge, understandings and skills that the field has identified as necessary. Given that the macro field of ASD training and good practice in the UK highlights that there are core knowledge, skills and competencies that need to be developed amongst those who work with or care for individuals with ASD, this research explored the meso level of the WebAutism programme in order to determine how WebAutism is constructed to meet the above needs. This included scrutiny of the aims and

objectives and wider documentation on the WebAutism programme in order to outline the pedagogical rationale for the programme before analysing data from module evaluations, external examiner reports and portfolio samples. This was considered a necessary and important component of the research as the aim was to achieve an understanding of the complexities of WebAutism and the context in which students were learning.

Study of WebAutism documentation highlighted that the broad aims of the WebAutism programme are well aligned with notions of good practice, as defined by the macro field of practice. This is an important point to emphasise here as the majority of government and research reports were written after the development of WebAutism, so the programme team did not have these to draw upon in the early stages of development. The aims of the WebAutism programme are to develop the students' understanding of the care, support and education of children and adults with ASD; to enable students to engage with lifelong learning, study and enquiry and to appreciate the value of education and training to society including enhancing the practice of students to apply skills in the care, support and lifelong education of individuals with ASD in a wide range of contexts. Learning outcomes for each module of the programme indicate that this subject knowledge includes knowledge about the disorder and how it impacts differentially on individuals (module one); how to support and enable learning for the individual with an ASD (module two) and contextual knowledge about legislation and provision in the field (module three). The programme aims to enable students to develop a knowledge base about the psychological

functioning of individuals with ASD as well as how to intervene to enable learning and to support the individual to function (Jordan & Jones, 1999). In addition to this subject specific knowledge, the programme aims to enable students to combine an ability to apply knowledge and skills to practice, including aspects that relate to the personal family of learning and teaching models, such as the ability to understand more fully the thoughts and feelings of another, the capacity to empathise and to strengthen appreciation of the variety of human experience, all aspects that are considered crucial in ASD practice (Peeters & Jordan, 1999).

The philosophical basis for WebAutism is built upon a perspective which views understanding as the key to effective practice and recognition that ASD is a transactional disorder that requires mutual change and adaptation on behalf of the person with an ASD and those who live or work with that person (Jordan & Guldberg, 2002). The programme aims to enable students to develop good understandings of how an ASD impacts on an individual, the range of strategies one can use to support that individual and a willingness to work on those strategies in a flexible way. Programme aims also highlight that it considers it essential that those working in the field develop underlying skills in teamwork and problem solving, reflection and observation and that they develop their ability to share the perspectives of others. This indicates a recognition that the kind of educational strategy that is needed is one that fosters continual learning in the workplace, with a focus on the quality of care and support.

WebAutism has the additional challenge of delivering a programme to students who are spread throughout the UK and to embed technological tools in

the learning and teaching environment. The mode of delivery is based upon what is often described in the field as a 'blended learning' programme, in which face-to-face and learning through the medium of the computer are combined. Students are divided into geographically based tutor groups that are headed by a regional tutor. Students also receive printed reading material and participate in face-to-face meetings with a regional tutor and tutor groups of approximately ten students. Much of the student learning experience is undertaken through the medium of the computer, from key course material delivered through online sections, to participating in computer mediated communication and accessing audiovisual material.

The pedagogy of WebAutism is based upon teaching being viewed as a way of inducting students into knowledge that has been validated by the curriculum and the learning outcomes of the programme, and opening up for student lead and peer-to-peer learning within that. The programme draws inspiration from a number of teaching families, encompassing the behavioural, the humanist, the socio-constructivist and the personal. Course design uses a combination of teaching methods, including an adapted form of the lecture (content presented to students through online screen templates), audiovisual materials presented through CD ROM, and online discussions which are integrated with course material, with a range of conversation based, enquiry based, and collaborative learning activities which enable students to connect with one another. The online 'lectures' present key information about the subject area, and borrow from the behaviourist teaching family by breaking down the subject

matter into manageable chunks focusing on key points. The aim is to organise and structure student learning and to give students a shared framework round which to develop understanding of facts and ideas. Furthermore, it was felt that these would give students a familiar framework to make the transition to online. Other issues include the pedagogical importance of the organisation of the learning environment through customizing the VLE to mirror the pedagogical structure of the programme through vocabulary, iconography and navigational routes. This includes clear early induction in the use of tools and task requirements.

Analysis of a range of data sources found that students expressed high satisfaction rates with the programme, in terms of finding materials easy and accessible to understand. Feedback from students also indicated that they found the content relevant to their work and valued the opportunity to network and participate in discussions with other students. There was also evidence that students develop improved competencies and believe that their study has impacted on their practice, including high satisfaction rates shown through statistical data from module evaluations indicating that students report that the programme has been useful to them in their work setting. Nevertheless, analysis of feedback also suggested divergence between different stakeholders who arrive with different expectations. Feedback from parents and from people working with adults suggests that there are some levels of dissatisfaction that the materials are too child-centred and possibly also too orientated to the school situation. A contradiction between parents and practitioners was picked up on

several levels, from the literature of the ASD field, through to analysis of feedback related to pedagogy in the meso level, with key themes related to these issues emerging through analysis of data from online discussions. Later we will see that careful investigation of this potential schism shows that it generates tensions in the community, but it also represents a strength of the community. Through these contradictions, students are enabled to learn from one another's perspectives. Parents emerge as playing a strong role in the community and whilst practitioners and parents need to be encouraged to show greater criticality in thinking towards one another's perspectives, the perspectives of parents feature strongly in this community. Thus a contest of values within the programme, between parents and practitioners, also leads to empathic understanding of one another's perspectives.

Furthermore, analysis of a sample of assessed work showed that although students show understanding of key concepts in the field and also show evidence of reflecting on and improving their practice, they still struggle with integrating theory and practice in a way in which allows both to mutually inform one another. The analysis identified some key ways that programme tutors can improve the learning experience for students. These include strengthening teaching materials in terms of the way that the portfolio is constructed and the portfolio questions asked, to enable students to become better at integrating new insights and understanding with their improved competencies in a way that impacts on practice.

Whilst the above findings focused on the pedagogy and values of the WebAutism programme, and on student feedback about the extent to which they feel the programme has enabled them to appropriate the competencies and the skills necessary to improve practice, it is also important to understand the structural and organisational context in which the students learn. This includes the systems and processes that are set up to facilitate learning and the way that the personnel who deliver the learning work together. The fourth research question therefore led to an examination of the WebAutism case study from the perspective of the structures and the organisation, the system design or 'the community of designers'. By researching how this community of teachers, designers and administrators work together in relation to tasks, roles and tools, we gained further understanding of the meso level of the programme. This provided data on how the values and pedagogy were translated into structures and systems and furthermore shined the lens on the broader WebAutism community, which included tutors, designers, and administrators. Chapter five highlighted the need to distinguish between the community of system design, which includes the community of designers and pedagogues, and the community of users, which includes the tutors and students.

Findings highlight that the activity system of WebAutism consists of three separate activity systems that are closely integrated: the teaching team, the technical team and the administrative team. This close multidisciplinary team generates learning activities through a process of contradictions that are resolved through shared praxis and which ultimately lead to further innovation.

Participants work with the same tools but from different perspectives. The members have various stakes in the community and in order to move forward, the activity sets need to elaborate common meanings in order to achieve synthesis of their various knowledge systems. This close multidisciplinary team generated learning activities through a process of contradictions that were resolved through shared praxis and which ultimately lead to further innovation (as described in chapter five). The above system space has their own set of rules, tasks and tools but these differ from the tasks, roles and rules of the community of tutors and students, despite these different activity systems accessing and working with the same tools (for example the WebCT learning environment, the online Sections and the online discussions). This brings us on to investigation of the micro level of the programme, as expressed through online discussions.

10.4. Research questions and findings: the micro level

5. How do learners appropriate the professional discourse, values and goals of the ASD carer (one measure of learning to be a practitioner in this context) and what kind of collaborative engagement do students show with each other's contributions (another aspect of learning to be a practitioner in this context)? 6. How do students move from peripheral membership to assembling ideas about community values and what it means to be a member? 7. How are online discussions influenced firstly by the selection of the topic of discussion (the discussion question) and secondly by the interventions of the tutor within the online discussion?

The above research questions were answered by conducting discourse analysis of a sample of online discussions. The theoretical lenses of socio cultural and activity theory and communities of practice shaped the discourse analysis by focusing on both participation itself and patterns of reciprocity in interaction through using exchange structure analysis in conjunction with content analysis that used the communities of practice framework to measure how students developed as reflective practitioners. The purpose of this research was largely to focus upon community measurement through examining i) how the learners appropriate the professional discourse, values and goals of the ASD carer (one measure of learning to be a practitioner in this context) and ii) what kind of collaborative engagement students show with each other's contributions (another aspect of learning to be a practitioner in this context). The study was particularly focused upon how students discuss, collaborate, share practice, participate in a learning community, draw out sets of values associated with the community, and their expertise in the field.

With reference to research question five, we saw from this research that there are a number of issues that do seem to affect many collaborative contexts (Pilkington & Walker, 2003; Guldberg & Pilkington, 2006) and that are also emerging from the networked learning field more generally (Preece, 2000; Salmon, 2000; 2002). The research found that students belong to a learning community in that they have joined the course to follow a programme of study, which leads to a qualification at the end. Within this programme, tutors have recognised the importance of social learning and have built in opportunities for

interaction and learning with and through one another into the structure of the course. Positive aspects of the WebAutism facilitation model include the integration of discussion tasks with good quality resources and regional tutors who give students time to talk amongst themselves, give supportive and reassuring comments, yet do not interrupt too often. Students talk in lots of different ways and for different reasons. The research shows that many of these are all important to a sense of community and, in the end, to helping each other learn. This research also shows that in any discussion there are clearly complexities resulting from multiple interacting variables which are difficult to isolate but include: the communication medium; the group dynamic; the topic or content to be discussed; the task and ground rules (instruction) and individual differences.

The research found evidence of some specific properties of WebAutism, which include collaboration as discussion (as opposed to, for example, joint collaborative construction of a resource or joint problem solving). A further more specific property of this learning context relates to the value placed on developing empathy for the person with ASD through the sharing of experience. This changes the nature of the kinds of task and the sorts of contribution valued such that narrative and an empathetic stance is valued as much as argument, with multi-voicedness and learning from others' perspectives itself clearly representing a core value of the community. Furthermore, within discussion there are some properties of the student constituent that are very specific. These include the authentic focus on reflective practice, the very personal and affective

nature of the discussion topics that require particular sensitivity and the authentic need to communicate through the VLE provided by the wide dispersal of students. Students are also unusually mature given the academic level of the course.

This research conducted detailed discourse analysis of online bulletin board discussion and found that the integration of course material and carefully structured discussion opportunities enabled students to develop a holistic perspective on the needs of the person with an ASD across settings and age ranges. We saw through the analysis in chapters seven, eight and nine, that students use the Time-to-talk discussions to talk about themselves, their communities and their practice. They asked each other for advice and reflected on each other's contributions. Students showed understanding of the transactional nature of ASD and described ways in which they changed their own behaviour and adapted their environment to the person with an ASD. The students also showed evidence of familiarity with the language of a discipline and its academic genre, which is indicative of students' abilities to read and write appropriately within a discipline (Lea & Street, 1998). The students developed their own discourse and showed a certain consensus of what constitutes a good practitioner as well as a shared set of values. This entailed having an identity as a carer or practitioner in the field, which then impacted on their sense of belonging to this particular programme. They participated in discourse over time and through this they shared practice, challenged one another, and learnt from one another's perspectives. Furthermore, students belonged to different subsets

and they worked at sharing and co-constructing shared understanding through this. They counter posed this with notions of 'the other'- people who did not have the understanding that they themselves have. The notion of 'the other' does also show that there is some contention between the values and shared understanding of the students and 'the world out there'.

The findings from this research highlighted that asynchronous online discussion can be a strong medium for certain types of learning. The online discussion boards were used well and were a good medium for the development of reflection. The groups recalled their past discussions by looking back at them and they were required to do so through the assessment process so the environment itself encouraged reflection and a ability to stand back from discussion to view it with more distance. With reference to research questions six and seven, the research found that the specific WebAutism facilitation model facilitates peer-to -peer learning. This facilitation model is one in which tutors structure the learning opportunities carefully but then step back to enable students to develop dialogue. The research showed that it is possible to enable discussion whilst giving the tutor a less interventionist role than we would normally expect the e-moderator to take on, particularly if the learning environment is well structured. This research found that this model was a contributing factor in enabling students to learn from one another, to motivate one another and to be co-learners and co-tutors together as it opened up opportunities for more distributed learning within that particular learning activity as peers became central in enabling one another to move from a peripheral

position in the community to a more central position. Students did this by sharing authentic stories with one another.

Furthermore, the findings highlighted that the nature of the question impacts on discussion. Some questions lead to greater interaction than others and to greater adherence to topic than others, highlighting that it is important to ask different questions for different reasons. The analysis of this chapter found that interaction patterns were influenced by the extent to which students had opportunity to comment on experience. If questions were too directly related to personal experience, then they tended to result in longer more monologue type contributions that tended to close discussion down. When reflecting on practice more generally and less personally, there were shorter contributions, which had more interactive nature and the character of lively debate. This was particularly true if the question encouraged students to reflect on a particular concrete case or personal experience but then asked them to express an opinion on a specific issue. Furthermore, the medium of online discussion was helpful in the context of this programme, as it took the emotionality out of the situation in that parents had a safe space in which they could 'tell their story' to professionals whom they were not directly involved in and in a way that enabled professionals to listen to their story.

The analysis found that parents had a strong voice in tutorial groups, playing a specific role that was often nurturing and supportive of other students. This is a positive aspect of the learning environment as parent/ practitioner partnership is clearly important in all fields of education although it has added

importance in the education and care of people with ASD due to the particular importance of consistency for this population. Parents are their children's first educators and are also the greatest experts on their children, so an environment which values parents and listens to them, can be empowering for all. Discussions clearly showed that practitioners learnt from parents and gained new insights from listening to them so it works both ways. Nevertheless, the research found that the WebAutism facilitation model could be improved through further adaptation with clearer structure and by addressing the roles of the tutor and students in more detail. Programme tutors would benefit from ensuring that ground rules are more explicitly discussed by providing guidance on how to make a good discussion happen and by findings ways to enable students to express greater criticality.

Findings from this research support other research, which show that there have been several steps in constructing this online community (Paloff & Pratt, 1999) and that online discussions were a crucial element in enabling this to happen. There were temporal characteristics that were reflected in attachment to and departure from this 'virtual community'. These included the need to define the community's purpose, the definition of norms and codes of conduct and the range of members' roles (Pilkington & Walker, 2003). The question of whether the environment is successful appears therefore be dependent on a variety of factors and is likely to have a series of stages (Salmon, 2000; 2002). This research found that the community of practice lens was useful in that it focused the study on the collective learning processes, on community development and

on the way that the community developed shared values, mutual interdependence and shared repertoires. Findings from this research highlighted that by learning through participation in a community of practice and by drawing upon experiential knowledge and expanding this, students were enabled to make sense of and act on their worlds. By discussing and working together on shared practice related to their workplaces, students co-constructed meaning about their practice in a safe environment. As students participated, there emerged a shared set of common understandings, the development of meaning (learning as experience), identity (learning as becoming), practice (learning as doing) and community (learning as belonging) (Wenger, MacDermott and Snyder, 2002).

10.5. Implications for learning and teaching

There are clear implications from this research for our understandings of how to create and structure productive learning environments. The field of e-learning challenges many traditional pedagogies. One writer has argued that

> "the major perceived weakness of correspondence education is the [lack of] extent and immediacy of interaction" (Daniels, 1996, p. 57).

Furthermore, Garrison and Anderson (2003) have suggested that online learning challenges the transmission approach to teaching and is thus disruptive. Some have suggested that there are two basic pedagogies associated with ICT (Information and Communication Technology) in education (McDonald & Mayes, 2005). One is the delivery of information, encapsulated by the pedagogy of multimedia and the web. The second is the pedagogy based on the tutorial dialogue and involves conversations between tutors and students. These are of

course extremes and there are many variations of computer-supported-activities between those extremes. Most tutors recognise that successful learning and teaching needs to be underpinned by both those aspects.

A number of leading researchers in the educational field suggest that dialogue is an important component of effective learning, including Laurillard's (2002) conversational framework, Mayes (2002) framework with dialogue as a key feature, and the practical inquiry model (Garrison et al., 2000). However, when this study began, the literature suggested that "there is only a limited amount of empirical evidence to suggest that text-based communication used in computer conferencing can, in fact, support and encourage the development and practice of higher-order thinking skills" (Garrison et al., 2000). In view of the identified gap in the literature and the high level of use of discussion forums, this study of online asynchronous discussion and the extent to which these contribute to the development of a community of practice has been timely. This research has revealed that asynchronous forums can provide both the physical and educational context to support an online collaborative learning community. Learning communities can provide a foundation for life-long learning and an opportunity to transform the learning and teaching experience. Laurillard (2002; 2006) has argued that universities must adapt to this change, become leaders in the application of technologies as learning tools, and adopt strategies that facilitate active learning. This will require the creation of courses that are open, distributed, dynamic, globally accessible and interactive (Elliot & McGreal, 2002). The implementation of online learning thus requires significant change in both

pedagogy and practice in higher education. The issue for teachers and learners is how to design and facilitate online learning environments to foster critical learning communities and engage in purposeful individual and social learning.

This research study shows the potential that blended learning programmes have for creating new possibilities for interactive learning. The data captured in the text-based discussion forums provides a rich source of permanent data that the teacher can use to analyse student discourse and reflect on the effectiveness (or lack of) of teacher intervention. One can track both the individual student and the process of group learning. This research highlights very clearly that the success of a particular medium, such as the online bulletin board, rests on how it is embedded in the aims of the programme, how the tutors use that medium and how questions are made relevant to students. The research also highlights the potential strength this medium represents, despite its limitations, in enabling reflection. This includes giving participants the chance to reflect and stand back, to plan and think about their contributions, and to formulate thoughts in a format that is different from both the spoken word and most forms of writing. Implications from this research include the fact that tutors need to think carefully about how to structure discussions, about the type of questions to pose students and about the impact of those questions on discussions. These considerations are particularly important to the formation of community, as community will be enabled if students are given the opportunity to discuss issues in a way which enables them to share information about

themselves with others, feel safe to discuss practical issues they find in their work situation, to conduct practical activities in their workplaces and then bring that practical work into the learning environment to discuss in a safe place.

The research also shows that a community of practice lens can have a dual importance. It can provide a research lens for understanding certain types of social learning but it can also provide a model for learning and teaching. In communities of practice individuals work together and connect with one another round joint activity focused upon domain, community and practice (Wenger, McDermott and Snyder, 2002). This makes communities of practice particularly suited to students who arrive in the "university classroom to acquire knowledge in one formal context in order to transfer it to another practical context" (Polin, 2008, p. 267). This study showed that WebAutism students transfer their learning back and forth between their learning situation (WebAutism) and their practical work or care situation (in schools, adults services and the home) whilst they study. They learn through their discussions of practical difficulties or issues encountered in their work situations. Given that the students are practitioners who wish to expand and develop their practice 'in the real world', the research found that the development of a community of practice gave students the opportunity to work together, to interact regularly sharing concerns, passions about a topic or a set of problems, through mutual engagement, joint enterprise towards shared goals and shared repertoires (Wenger, 1998). This opened up for students to learn through and in their contexts of work.

Communities of practice have implications for learning and teaching as it questions the traditional roles of learners and tutors. Learning communities have a hierarchical relationship between tutors and students. Institutions usually create learning communities, they are bounded and students participate for a certain amount of time. Communities of practice, on the other hand, are based on more distributed, naturally occurring relationships between people in a community (Wenger, 1998). The distinction between a learning community and a community of practice thus rests on notions of the different power relations in the two different types of community. Given that communities of practice emphasise the natural development of community, its spontaneity and distributed power relations, we cannot assume that a formally constituted group such as the WebAutism students will automatically become a community of practice. It is the nature of functionality of the relationship that is critical. For a community to thrive, the students must engage and develop alignment with the cohort, the programme and the discipline through shared repertoires of experiences, and shared history. In order to enable that to happen, this research highlighted the importance of structuring learning environments in a way that enables peer-to-peer learning, as this can enable students to form a community of practice whilst simultaneously belonging to a learning community in which there is a hierarchical relationship between tutors and students. As Wenger and Snyder put it:

> "Studies have shown that apprentices learn as much from journeymen and more advanced apprentices as they do from master craftsmen. It seems clear then, that effective learning depends on the availability of peers and their willingness to act as mentors and coaches" (Wenger, McDermott & Snyder, 2002).

This can in part be done in an incremental way in which the pedagogy gradually opens up to enable more peer-to-peer learning opportunities and gives students the opportunity to develop their own 'culture' and language within the programme.

One of the tensions in generating communities of practice within academia, relates to the fact that they cannot be as fluid as the ideal in the organisational literature. In academia, learning communities are formally bounded, as is the case with the WebAutism programme. The termination of formal coursework threatens the ongoing and spontaneous nature of communities of practice and this was a genuine cause of distress to WebAutism students, with continual requests from cohorts to be able to continue networking with one another after they had completed the programme. This highlights that academic programmes can enable the development of communities of practice but unless resources and facilities are made available, this kind of community is unable to continue to develop and mature after students have completed their studies.

These issues highlight that the development of online pedagogy can be challenging to tutors as it presents a complex set of issues for practitioners, including an embrace of new pedagogies, development of new technical skills and adjustment to changes in the teaching role. It requires a sound understanding of learner-centred pedagogy, how the capabilities of the technology can support that pedagogy, and an awareness of the uniqueness of

each learning community. One implication of this study relates to the pedagogical value of a designated team of tutors, administrators and e-learning specialists working closely together and the consequent coherence and synthesis that is possible when this is successful. I would argue that the field needs to recognise that open communication, shared values and close teamwork are crucial for the successful delivery of this kind of e-learning and blended learning. In the case of this study, the work of this designated team and their shared values meant that they were able to adapt a commercial learning management system to their needs, thus managing the paradox of aiming for a socio constructivist pedagogy whilst delivering this through an essentially instructivist management system (WebCT).

This study provided a practical example of the innovative learning capabilities of online learning, as long as we are driven by the learning needs of students rather than the technology itself. There are exciting educational possibilities that are generated by e-learning. By supporting interactive learning across geographic and cultural boundaries and by facilitating critical learning communities, online learning can impact significantly on the way we approach learning and teaching in higher education. Given that the next step for WebAutism is to become an international programme, it has the potential to be involved in building communities of learners across the world. This will depend on the ability to use technology to leverage resources and group dynamics in new ways in order to make fundamental changes in every part of the learning process (Kimball, 1998).

10.6. Implications for training in the field

The above findings show the clear value of training that takes place over time, in a way that enables participants to engage in deep learning related to their practice. In relation to CPD activities in general, some research has found that activities are often of insufficient duration to make a difference and that professional development that has high contact hours and takes place over sustained period of time, is more consistent with systematic reform (Boyle et al., 2004). Some types of professional development are more likely to offer sustained learning opportunities. These include job embedded learning, collaborative learning opportunities, networking with others and sharing practice (Boyle et al., 2004). This research has shown that these aspects can be achieved through a blended e-learning programme and that networked learning environments can be designed and adapted to meet those needs. Implications for the ASD policy field of practice include the importance of long-term programmes over time in which students can develop deep understandings.

The research also highlights the importance of parents and practitioners studying together. The literature review showed that the field recognises that parents and practitioners need to work more closely together. This needs to take into account the practical difficulties involved in enabling joint-up responses, which requires a new way of conceptualising collaboration and demands changes in inter-professional practice (Daniels, 2004). The whole purpose of the WebAutism programme is that practitioners should be able to seek to solve problems in other settings where they should be guided by the activity within

WebAutism itself, even when this community is physically absent (Daniels, 2001). Good autism practice can be based upon giving people opportunities to learn together and from one another, to be independent learners that build up the skills and confidence to draw their own conclusion. Development of the underlying skills of reflection, observation, and team-work needs to happen in conjunction with content that enable further understanding of the person with an ASD.

Although there is much discussion at the moment about the importance of locating CPD within the workplace setting and that we need to broaden concepts of CPD to include peer observation and shadowing other staff, we also need to be clear that experience alone will not be enough. If we define productive learning as an ability to broaden horizons and transform current understandings, then we need to stay focused on the fact that experience alone does not necessarily lead to learning. A teacher can shadow another teacher but the practice and experience of the teacher being shadowed might be misguided. An individual teacher might have thirty years experience, but that experience might just be the same experience thirty times over (Jordan, personal communication). Shadowing and applying learning in the workplace needs to happen within a framework of extension of knowledge and 'development of expertise'. That reflection on experience needs to be rooted in a knowledge system or framework that challenges or extends current levels of experience and expertise and makes people think critically about their practice. This highlights the importance of a clear value and knowledge based system. It is not enough for people just to

share practice, they need to be given opportunities to share practice within a context in which there is also clear expertise.

10.7. Implications for research

A body of research is starting to emerge on communities of practice in higher education (Kimble and Hildreth, 2007). By focusing on productive learning within the context of a field of practice and the pedagogy of the programme, this study has used data from online bulletin boards to explore how students become engaged in transformational learning. This has implications for research in that it entails going beyond learning as acquisition or participation to a focus on how students make sense of the world (Edwards, 2005). This takes the concept of professional learning beyond mere curriculum and means we need to investigate learning as a social phenomenon. This study's unique contribution is rooted in the focus on interaction and development of relationships as a foundation for both learning and collaboration, on knowledge construction as situated in practice and the development of self through participation in community (Barab and Duffy, 2000).

The study of online forums is an emerging field of research and therefore methodological considerations are still at a relatively early exploratory stage. A number of different methods are used in the analysis of online discussion, including grounded theory (Macdonald, 2007). In measuring and understanding the development of community, research needs to focus both on interaction patterns and ways of collaborating and on content and thematic analysis. One of

the implications for research relates to the importance of focusing on both form and content when trying to understand how learning is taking place.

Further research could be extended to investigating the relationship of individuals to other communities and to analyse how interaction in other communities affects the joint constructive activity of this community. For example, the extent to which the activity system has the transformative power to change institutions and other neighbouring communities will be based upon the extent to which students are able to contest the values of others with whom they work in these 'outside systems' (Reeves & Forde, 2004). It was outside the scope of this study to try to assess the extent to which these voices have been carried outside the network or to assess the conflicts and tensions for these practitioners in making their voices heard outside the network, although some feedback has highlighted some of the difficulties involved in influencing change in their own settings, in part relates to the relatively low status role that these practitioners and carers have in many of their settings. This is an issue worthy of further investigation, as it would enable more direct study of the impact that the programme has in the field, to investigate the extent to which the programme impacts on students' practice and whether it changes the way that they work with or care for the person with an ASD.

Wenger, MacDermott and Snyder (2002) suggest a common mistake in community design is the focus on public activities. Researchers need to recognise that community cohesion is often also maintained by communications that happen outside the 'public' environment, such as tutors privately contacting

participants and the communication that has been described as 'backchannel' communication (Wenger et al., 2002). This would be worthy of further study as we need to give consideration to private spaces for students to interact and there is very little research on this aspect. This recognizes that we need to distinguish between exchange, participation and learning through reflection. The 'lurkers' could be learning more than the very vocal and active person, for example and little detailed research has dealt with these tensions between action and reflection.

Recommendations for future research take into account limitations of study. This represents a small-scale, exploratory study aiming at developing insight into learning processes on a particular programme of study. The research is therefore limited in its ability to generalise or to seek simple causal relations between the case and effective learning. Rather, the research has attempted to explore the dynamic process of knowledge construction in this particular community. This research has highlighted the uniqueness of the student group and it's complexity, as well as the complexity of the field of practice and the autism spectrum itself. The experiences of these part time distance learners might therefore be very different to the experiences of conventional students. We also need to be aware that the research represents a partial and limited understanding of the learning process and further research could focus on learner experiences through interviews.

10.8. Key recommendations for policy, training and research

Policy recommendations

1. The research identifies the potential strength of this educational training that enables multi disciplinary student groups of parents and practitioners to study together. This model should be extended to other areas of Special Educational Needs to meet the changing demands of the workforce such as the integration of the children services.

2. This research identified the strength of a training programme that provides expertise and subject specific content whilst simultaneously enabling students to interact with one another and connect through online discussions related to practice. This could provide a model for other Continuous Professional Development programmes.

3. The field needs to undertake further evaluation of training that takes place over time, in which learners have the opportunity to become members of a learning community and/or a community of practice.

4. Institutions need to encourage multidisciplinary teams to work closely together in curricula design to ensure integration between pedagogy and technology.

Training recommendations

1. To encourage the development of a community of practice framework in the delivery of continuous professional development programmes.

2. To develop training models that enable learners to develop peer-to-peer mediated learning, where peers are effective co-learners and co-tutors

and through this enable the development of a community of practice.

3. To develop a network for practitioners in the ASD field of practice with the view to enabling the development of a wider community of practice.

Research

1. The research identifies the need to study the strengths of different communication mediums and to conduct further research on the variety of tools available to enable communication, in order to identify the best ways of using these tools.

2. The research recommends that theories of socio cultural and activity theory and communities of practice can be used in conjunction with one another as lenses to understand both organisational processes and meaning making in learning communities.

3. The research highlights the value of analysing 'talk' over a period of time and that this necessitates methods that can capture both interaction patterns and the content of talk.

10.9. Dissemination

There are a number of avenues in which this research has been and will continue to be disseminated. Dissemination has already started taking place within the School of Education and the university as a whole as the research has

matured and developed, by delivering workshops at school and university level, writing material for the school learning and teaching newsletter and delivery of seminars. The programme was awarded an excellence in teaching award by the Head of School in July 2008.

The research has also been disseminated through peer reviewed conference presentations at Educa Berlin (2002), two Autism Europe conferences (Lisbon, 2004 and Oslo, 2006), a poster presentation at World Autism (South Africa, 2005), and a paper presentation at a Kaleidoscope (European network of excellence) conference. It has also included dissemination through various networks such as the i-AFIEL newsletter and community discussions (www.iafiel.gva.es), through the CP Square community (http://cpsquare.org) facilitated by Etienne Wenger and others, and through ELESIG (elesig.ning.com), which is a network for researchers working on learner experience research.

Aspects of the research have been published in practitioner journals. These include Special Children and Good Autism Practice (Guldberg, 2001; Guldberg, 2002; Jordan and Guldberg, 2002). The research has also been published in academic peer reviewed journals. These include the Journal of Computer Assisted Learning, the Journal of Educational Technology and Society and the International Journal of Lifelong Education (Guldberg and Pilkington, 2006; Guldberg and Pilkington, 2007 and Guldberg, 2008). The research is also being published as a chapter in a research based book (Pilkington and Guldberg, in press). Further publication plans include a paper for the British Journal of

Special Education on training for practitioners in the field of ASD and a paper in defense of the online bulletin board for the Journal of Special Education Technology.

On the strength of work in developing the WebAutism learning environment and on the research reported here, the writer was asked to develop a national web based resource for primary care practitioners and general practitioners in Scotland. More recently, the writer has been involved in leading the development of the DCSF Inclusion Development Programme for Early Years. This has enabled the writer to influence policy directions. In research for the Autism Education Trust, the author contributed material on training needs of autism practitioners and this has a direct influence on policy. Finally, the writer has won a bid from the ESRC TLRP programme with a consortium of colleagues from a number of different institutions to develop a multi modal learning environment for children with Asperger syndrome and for typically developing children. These developments are all a direct consequence of the writers involvement with WebAutism so provide an indirect means of dissemination of the research.

10.10. Conclusions

The study answered the research questions outlined at the beginning of this chapter by combining socio-cultural activity theory and communities of practice as lenses for understanding how students on this programme are developing the skills and competencies of good practice in the field of ASD through engaging in productive learning**.** One of the aims of the research was to address to what

extent the theoretical lenses of socio cultural activity theory and communities of practice were useful as tools for understanding the WebAutism case study as the study weaved strands of theory and practical application together by using socio-cultural and activity theory as a guide to conducting empirical investigation. It thus conducted applied educational research in which the theory provides an explanatory account that helps us understand the generalities of a phenomenon (such as communities of practice) within the specific situation of WebAutism and that can be tested against the evidence provided by careful research (Mercer & Littleton, 2007).

The use of socio-cultural and activity theory to guide empirical investigation of the case study of WebAutism has enabled a detailed, holistic and ethnographic investigation of the case study itself, viewing the activity within it from a number of perspectives and different vantage points. For this research, the strengths of socio cultural and activity theory lay in locating understanding of learning processes within a context and enabling further understanding of the systems and structures that support the learning process. The research highlights that we cannot draw real conclusions about the medium of the online discussion board without examining the context in which learning is taking place. The medium itself is a tool that can be used in different ways and is itself mediated by context, tasks and roles and the lens of socio cultural and activity theory enabled me to understand how this medium was used in this particular programme and through this to understand one of the generic potential strengths of this medium (the development of reflection).

Appendices

Appendix one: Consent letter to students

Dear students,

We hope you have enjoyed the first Module of the University Certificate (ASDs) at the School of Education, University of Birmingham.

As you know, this is an innovative Programme in the relatively new area of e-learning. It is therefore especially important for us to conduct research on all aspects of the Programme of Study in order that we can continually evaluate and improve it. We are therefore writing to you to outline our research intentions. We aim to collect various data from different stages of study across different year groups of students. The data collection ranges from tracking log on behaviour throughout the study, to eliciting feedback on technical as well as teaching and learning issues. We also undertake analysis of some bulletin board discussions in order that we can find out more about how students learn in that type of environment. All the feedback from data is used to help us identify how to improve the learning experience for *all* students. Research data can help us gain some valuable information about our students and the factors that contribute towards learning styles.

We wish to seek agreement from students that we can use data related to Bulletin Board discussions and questionnaires for research purposes. Please be aware that this is not a course requirement and that you are free to decide not to participate or to withdraw at any time without affecting your relationship with anyone in the Web autism team. Please be assured that *all* information will be fully confidential and students will *not* be named or identified.

No report, written or otherwise, will allow for an individual to be identified, unless we have specifically gained your permission to do so. Each questionnaire, for example, will be given a number and these will be kept separately so that the person analysing the questionnaires will not know who the author is. You have a right to view any data we hold on you.

Some of the data will be part of Karen Guldberg's PhD, which is an evaluative case study aimed at continued improvement of the Programme of Study. All publications related to the research will be made available on the website. If you have any concerns at all, please contact me on Tel: 0121 414 3470 or E-mail: k.k.guldberg@bham.ac.uk

Kind Regards,

Karen Guldberg

Appendix two: Entry questionnaire

UNIVERSITY CERTIFICATE & CERTIFICATE OF HIGHER EDUCATION (ASDs)

Questionnaire

Dear Student,

We have produced a questionnaire for you to fill in towards the end of Module 1 of your Programme of Study (PoS). The purpose of this information is for the Webautism team to be able to assess the factors that may have an impact on learning on this programme of study. It is extremely valuable to us in planning and implementing changes to the Programme of Study. All information will be treated as completely confidential. No report, written or otherwise, will allow for an individual to be identified, unless we have specifically gained your permission to do so. Each questionnaire will be given a number and these will be kept separately so that the person analysing the questionnaires will not know who the author is.

This questionnaire is not a course requirement and you will not be assessed in any way from it. However, it can help us gain some valuable information about our students and the factors that contribute to learning so we would be extremely grateful if you would take the time to fill it in.

Thank you for taking time to give us this information. We are very grateful.

Please return the completed questionnaires to Claire Robson, in the envelope provided by **5th May 2006.**

Karen Guldberg
E-mail: k.k.guldberg@bham.ac.uk
Tel: 0121 414 3470

PLEASE ENSURE THAT YOU COMPLETE AND SIGN THIS SECTION -
DO NOT REMOVE IT FROM THE QUESTIONNAIRE

(To retain anonymity, this page will be removed from your completed questionnaire once it has been received.)

Name: ……..

I do/do not * give permission for my data to be used for research purposes.
(* Please delete as appropriate)

Signature: …….. **Date: ……**

Please mark the most suitable answer to each question or fill in the box *other*. You can tick more than one box where appropriate.

Please use blue or black ink.

BACKGROUND DETAILS OF THE PERSON WHO IS FILLING IN THE QUESTIONNAIRE

1. Gender

Please mark the box:

Male ☐ Female ☐

2. Age

Please mark the box:

I am 20 or under ☐ I am between 40-49 ☐
I am between 21-29 ☐ I am between 50-59 ☐
I am between 30-39 ☐ I am over 60 ☐

3. Ethnicity

Please mark the box:

Your ethnic origin or racial group:

White ☐
Black Caribbean ☐
Black African ☐
Black other ☐
Chinese ☐
Indian ☐
Pakistani ☐
Bangladeshi ☐
Asian other ☐
Other origins ☐

4. Disability

Please mark the box

Yes ☐
No ☐

Please submit further comments if you wish. If you have a significant difference in the way you think and learn that you do not regard as a disability, it would still help us to know what this is:

_____

_____

EXPERIENCE OF AUTISTIC SPECTRUM DISORDERS (ASDs)

5. Background

Please mark the most suitable answer to each question or fill in the box *other.* You can tick more than one box where appropriate.

I am a parent of a person with an ASD ☐

- This person is a child ☐ or an adult ☐

I care for or work with a child with an ASD ☐
I care for or work with an adult with an ASD ☐
I have an ASD myself ☐
Other (please comment below) ☐

Please submit further comments if you wish:

6. The *type of setting* the person with an ASD whom you are working with or caring for is in or your own circumstances if you are a person with an ASD,

Please mark the most suitable answer to each question or fill in the box *other.* You can tick more than one box where appropriate.

Pre-school ☐
Home based intervention/educated ☐
Mainstream school ☐
Specialist provision (ASD) ☐
Special School ☐
Residential school ☐
Further Education College ☐
Residential adult provision ☐
Living independently ☐
Supported living ☐
Living with family ☐
Supported employment ☐

Higher Education ☐
Employment ☐
Other (please comment below) ☐

Please submit further comments if you wish:

---

7. Length of experience of caring for/working with people with ASDs

Please mark the most suitable answer to each question or fill in the box *other.* You can tick more than one box where appropriate.

Less than 2 years experience ☐
Between 2-5 years experience ☐
Between 6-9 years experience ☐
Over 10 years experience ☐
Other (please comment below) ☐

Please submit further comments if you wish:

---

8. What are your main aims in taking this course?

Please grade the answers between 1-8 according to which is most important. For example: if the most important issue to you is to gain a further qualification, mark this 1. If the second most important is that it is a job requirement, please mark that 2.

To gain a further qualification ☐
To increase professional knowledge ☐
To increase my knowledge and understanding ☐
To become a more effective practitioner ☐
To learn about effective strategies in ASDs ☐
To validate my practice ☐
It is a job requirement ☐
Other (please comment below) ☐

Please submit further comments if you wish:

9. What is your experience of training in ASDs?

Please mark the most suitable answer to each question or fill in the box *other.* You can tick more than one box where appropriate.

I have done in-service training	☐
I have attended one-day training events	☐
I have attended training events that have lasted between 3-5 days	☐
I have attended conferences in ASDs	☐
I have attended a course of study in ASDs	☐
Other (please comment below)	☐

Please submit further comments if you wish:

Please tell us at what level you studied _____

How long was the training? _____

Did you attain a qualification and of so, what was the name of the qualification?

_____

Did you receive a Certificate as a result of the training? _____

10. What main benefits do you expect to gain from the Programme of Study in relation to ASDs?

Please grade the answers between 1-6 according to which is most important.

New knowledge	☐
New professional contacts	☐
Greater ability to support the person with an ASDs	☐
Increased confidence	☐

More general contact with others in the field ☐
Other (please comment below) ☐

Please submit further comments if you wish:

---

11. Is the award of the certificate important to you?

Please mark the most suitable answer to each question or fill in the box *other.* You can tick more than one box where appropriate.

Yes ☐ No ☐

Please submit further comments if you wish:

---

12. Where did you last do any formal training or study? (By formal we mean part time or full time study for at least a year)

Please mark the most suitable answer to each question or fill in the box *other.* You can tick more than one box where appropriate.

At school ☐
Further Education College ☐
Higher Education ☐
Private training College ☐
Vocational training College ☐
Other (please comment below) ☐

Please submit further comments if you wish:

---

13. When did you last do any formal training or study? (By formal we mean part time or full time study for at least a year)

Please mark the most suitable answer to each question or fill in the box *other.*

Less than 2 years ago	☐
Between 2 and 4 years ago	☐
More than 5 years ago	☐
More than 10 years ago	☐
More than 20 years ago	☐
Other (please comment below)	☐

Please submit further comments if you wish:

---

14. Please list the types of qualification you have:

Please mark the most suitable answer to each question or fill in the box *other.* You can tick more than one box where appropriate.

NVQs	☐
GCSEs	☐
A levels	☐
Professional qualification	☐
Academic degree	☐
Postgraduate academic qualification	☐
Academic qualification less than degree	☐
Other (please comment below)	☐

Please submit further comments if you wish:

---

15. Why have you chosen web based study?

Please grade the answers between 1-8 according to which is most important.

☐ It offers me flexibility to study at my own pace and in my own time
☐ It was the only course at this level that interested me
☐ I considered other such courses but preferred this one for reasons other than internet delivery
☐ I would like to experience life as a student on an online course
☐ It was the only option open to me
☐ It gave me flexibility of location
☐ I prefer electronic to face-to -ace contact
☐ Other (please comment below)

Please submit further comments if you wish:

_____

_____

_____

_____

Thank you for completing this questionnaire.

Please return it, in the pre-paid envelope provided, to:

Webautism Programme Administrator
School of Education
University of Birmingham
Edgbaston
Birmingham
B15 2TT

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